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147
2
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RECTAL SYMPTOMS FROM THE GENERAL SURGEON'S STANDPOINT

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The greater part of all rectal surgery is done by the general surgeon, and practically all general surgeons do rectal work. At the same time, it is true that most of these men regard rectal work as a subordinate part of their practice. They are not especially interested in it and are not particularly adept at the making of rectal examinations. It is not improbable that a considerable number do not possess a proctoscope and are unskilled in the use of the instrument. Under such circumstances a review of the significance of rectal signs and symptoms would seem worth while. There is nothing of great novelty to be expected in such a discussion, but clarification and emphasis on clinical facts have a value as practical if not as striking as novelty.

The signs and symptoms that accompany rectal disorders may be grouped under comparatively few headings: sensory disturbances, abnormal secretions or discharges, disturbances of defecation, anatomic changes. The duration of any of these derangements and their intensity are also of important bearing in many cases. By asking specific and searching questions regarding each of these items, one may usually build up a clinical picture that aids greatly in making a diagnosis. The more common of the rectal lesions will be presented from this standpoint, in synoptic form, with brief comments.

The first point to be emphasized is that no single symptom is pathognomonic of any single rectal lesion. For instance, pain occurs with fissure, abscess, thrombosed hemorrhoids and penetrating foreign bodies. Bleeding occurs with internal hemorrhoids, polyps and papillomas, ulcerative colitis and cancer. Secondly, lesions that are entirely different in their pathologic nature may present a very similar symptom complex. Thus, ulcerative colitis and carcinoma of the rectum may each cause the passage of blood and mucus in the stool, frequent and urgent desire to defecate, loss of weight, and abdominal, crampy pains. The explanation, of course, lies in the fact that these very different lesions have in common an ulcerating surface, an irritative stimulus to the defecation reflex and a disturbing effect on nutrition. In the third place, conditions that may be quite different in fact may be described by patients in identical terms. When a patient states that he notices a discharge or secretion or moisture about the anus, he may refer to the pus from a fistula, the

mucus from everted hemorrhoids, the discharge from an infected pilonidal sinus or the serous weeping of pruritus ani.

It may seem from what has been said that there is not much diagnostic significance to be attached to the patient's various rectal complaints, yet this is not the case. Many rectal disorders have a quite characteristic symptom complex. The difficulty in eliciting a description of it lies in the widespread habit of patients of being vague in their complaints and description of rectal disturbances. "Rectal trouble" and "hemorrhoids" are the initial statements of so many that one comes to expect them. Even when it is pointed out that these statements are unsatisfactory, the patient often seems unable to put into words a satisfactory description of what ails him. Hence, it becomes necessary to ask a series of pointed and exact questions that for the most part call for a "yes" or "no" answer. Not infrequently, with certain patients, this searching inquisition may become a bit irksome both to examiner and to deponent, but it amply repays persistence. One should cover the general headings of sensory disturbances, abnormal discharges, alteration of bowel habits and anatomic abnormalities first, and then any admitted deviation from normal should be elucidated by means of a number of detailed questions. For example, suppose that a patient complains of pain. One then asks whether the pain is dull or sharp, brief or persistent, related to the passage of stool or to any other definite act, of recent occurrence or long standing, abrupt or gradual in development, relieved by any treatment yet tried, referred to other parts of the body, or associated with other symptoms under the other general headings of discharges, bowel changes or anatomic abnormalities. These headings are then taken up in a similarly exhaustive manner. After perhaps five minutes of such questioning one learns all that the patient has to tell of his own observations on his illness. It is surprising how often there emerges a picture so characteristic that one may almost make a diagnosis by it alone. Some of the characteristic symptom complexes are so frequent that they merit a condensed description.

Pain beginning with defecation and lasting for from many minutes to several hours afterward, of a gnawing, burning or biting character, with a little bleeding at infrequent intervals, with a small protruding tag, tightness of the sphincter muscle and a tendency to constipation, the whole condition lasting for a number of weeks and getting worse, spells fissure in ano. Pain beginning suddenly a day or a few days before, severe, stinging and aching, quickly reaching a maximum and persisting steadily without relation to defecation and without throbbing accompanied by the sudden appearance of a hard, tender lump at the anal margin, little or no bleeding and no noteworthy alteration of bowel

habits, indicates a thrombosed marginal hemorrhoid. A history of swelling that appeared near the anus some time previously—perhaps a few weeks, perhaps several years ago—with dull throbbing pain and soreness, that broke or was opened and has discharged pus since then, usually means a fistula. These characteristic clinical pictures are familiar to most surgeons. A few rare conditions are equally characteristic. A sudden, severe gripping pain in the anus, coming on abruptly, entirely without apparent cause, often in the night awaking the patient from a sound sleep, occurring at irregular and sometimes long intervals, lasting a few minutes, promptly relieved by the application of heat, with no other related symptoms whatever, is typical of rectal neuralgia. A sudden, severe stabbing pain in the anus, continuous and unremitting, starting during the act of defecation, with no previous history of trouble and not accompanied by other symptoms, is usually due to the penetration into the anal wall of some swallowed sharp foreign body.

However, not all rectal lesions have characteristic stories. For instance, the two cardinal features of hemorrhoids are bleeding and protrusion. It should be noted in parenthesis that pain occurs only when some complication, such as thrombosis, ulceration or infection, has developed. But the cardinal features of anal and low rectal polyps and papillomas are also bleeding and protrusion. As was mentioned earlier in the article, there is a certain general similarity in the complaints presented by patients who are suffering with ulcerative colitis or proctitis and by those who have rectal cancer. This leads one to the inevitable conclusion that, valuable as a competent and searching analysis of the patient's complaints undoubtedly is, there is something more essential to a proper investigation of rectal conditions, and that additional something is the making of a proper local examination.

The making of a rectal examination requires a good light, the knee-chest or Haynes position, the performance of a careful digital examination and inspection of the interior of the rectum with a proctoscope. All these requirements are easily within the attainment of the general surgeon. It is true, of course, that the rectal specialist will have greater skill and familiarity in such procedures than the surgeon who employs them only occasionally, but if one undertakes to do rectal surgery at all, as most general surgeons do, it is incumbent on one to acquire at least sufficient skill in rectal examination to avoid gross errors of diagnosis. The rectal specialist or proctologist who is also a competent surgeon will remain in a position of advantage in the handling of rectal diseases because of his superior training and experience in this special field. He will be the consultant for advice and treatment in unusual cases from far and near and in his own locality may properly expect to be preferred over the general surgeon for the ordinary run of rectal conditions. But in many communities there are no specially trained proctologists, and the general surgeon must care for rectal diseases along with his general surgical work. I am a general surgeon, but one especially interested in rectal diseases, and I have been impressed with the opportunity for improvement in the field of rectal work on the part of general surgeons. A fuller understanding of the significance of rectal complaints and the development of experience in the technique of rectal examinations will ensure this desirable improvement.

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ABSTRACT OF DISCUSSION

DR. CURTICE ROSSER, Dallas, Texas. I have no ground for disagreement with Dr. Stone's premises. The suggestion that the general surgeon who desires to include proctologic lesions in his operative field shall first equip himself with an armamentarium of mental interest and physical diagnostic equipment is self-explanatory and entirely logical. The value of a digital examination has perhaps been oversold to the profession in a praiseworthy attempt to popularize a neglected but simple diagnostic aid. Unfortunately, blind palpation will not distinguish between bleeding amebic ulceration and bleeding hemorrhoids, for example. The trend of present statistical information, moreover, leads one to believe that two thirds of all rectal cancers are in their early stages beyond the reach of the probing finger, and here again a simple digital examination gives the surgeon a sense of false security which an instrumental examination would dispel. Moreover, the rectosigmoid canal is a blind spot to the roentgen ray. Many years ago, William Osler acknowledged the benefit derived by medicine in general from the concentration of effort on the part of those who in the bewildering complexity of modern medical science find relief in the limitation of the work of their lives to some comparatively narrow field that could be thoroughly tilled. The satisfaction that many men derive from the mastery of even a small department, particularly one in which technical skill is required, would be enhanced if by the free interchange of the fruits of experience and knowledge which our craft encourages they could know that the broader divisions of medicine were somewhat advanced. No medical man refuses to accept the considered observations of competent laboratory workers. The various surgical specialties from their own small areas could pass on to general surgery and to one another certain well-proved concepts in surgical technique as well as diagnostic methods. To be more specific, the proctologist, grateful to the surgical preceptors who give him fundamental surgical training, should reciprocate by aiding the general surgeon in connection with the management of anal lesions, encouraging him to discard the routine use of the cautery in anorectal lesions, attempting to convince him that divisions of the sphincter muscles has only long usage to commend it, and encouraging the basic concept that the same diagnostic care, adherence to anatomic zones and gentleness in handling delicate tissues are indicated in the anorectum as the surgeon is accustomed to employ in the other areas of the body.

DR. FRANK C. YEOMANS, New York. Dr. Stone's paper outlines clearly the significant symptoms and procedure for the recognition of rectal diseases. In taking the history, one should bear in mind the possibility of amebic infection. In each of two men referred to me with the diagnosis of rectal carcinoma, an amebic granuloma was found. Both responded promptly to specific therapy. One should not forget the sad experience of the Chicago epidemic of 1933, when many patients with amebiasis were operated on in different localities under the erroneous diagnosis of other rectocolonic lesions, and usually with fatal results. Although the history is important, the results of a thorough examination are the decisive factors. Statistics indicate that about 10 per cent of patients with rectal carcinoma have been operated on or treated for internal hemorrhoids within the year prior to the date on which the correct diagnosis was made. In the majority of instances the tumor could have been felt or seen. The lesson is that no case of bleeding internal hemorrhoids should be treated palliatively, by injection or operation, before digital palpation and proctoscopy. There is a tendency to refer at once patients with rectocolonic symptoms for an x-ray examination before proctosigmoidoscopy. Clinical experience shows that the sequence should be reversed. It is well nigh impossible to demonstrate, by the x-rays, early lesions of the bowel within the bony pelvic girdle. Small tumors and ulcers are missed, and the nature of extensive ulcerative processes is not disclosed. It is not just to subject a patient to an x-ray examination for a lesion that can be felt or seen without the previous benefit of proctoscopy, nor is it fair to the roentgenologist who should be furnished with all the results of the proctologic examination before he undertakes the examination. By special study any general surgeon can

become proficient in proctoscopy. Failing this, the patient should have the benefit of an examination by one skilled in the use of the instruments and competent to interpret the character of the lesions seen and, when indicated, obtain directly material for smears and culture and representative biopsy specimens. This naturally leads to my major plea, namely, that every general hospital should have on its staff a competent proctologist supplied with the necessary instruments. The American Proctologic Society is performing a valuable service in disseminating knowledge in this special field to the profession in general, and in particular to those physicians who are devoting their time and effort to the specialty.

DURATION OF IMMUNITY AGAINST DIPHTHERIA ACHIEVED BY VARIOUS METHODS

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Diphtheria toxin-antitoxin as an active immunizing agent was discovered in 1913 by Behring and became generally used in the United States from 1914 on. It was found to give immunity to 85 per cent of the subjects who received three 1 cc. injections, and the length of immunity from good preparations was determined by my co-workers and myself as being ten years or more in 80 per cent of the cases.¹

In 1924 Zingher and I² accepted the superiority of Ramon's anatoxin—or, as it is called in this country, the formol toxoid—as compared with toxin-antitoxin. We summed up this superiority by stating that toxoid is (1) more stable, (2) easier to prepare, (3) not dangerous if accidentally frozen, (4) more effective and (5) nonsensitizing. After 1931 administration of toxoid, in two or three doses, gradually supplanted the use of toxin-antitoxin both in Europe and in this country. The immunity achieved with two doses was usually 95 per cent, and the duration of immunity was assumed to be as long as with toxin-antitoxin. In 1931 Glenny and Barr³ described the alum-precipitated toxoid, which in single doses furnished as high immunity as the fluid toxoid did in two or three doses. The rapidity of the development of the immunity was also greater. Because of the convenience of the single injection, the use of alum-precipitated toxoid supplanted the use of fluid toxoid very rapidly, and from 1932 on, especially in the United States, this was the generally preferred method for immunization against diphtheria.

Recently several reports appeared in the literature which introduced some contradiction concerning the duration of the immunity when only one dose of alum-precipitated toxoid is used. The two best instances of such contradictory reports are those by Fraser from Canada⁴ and Farago from Hungary.⁵ Both used the accurate method of diphtheria antitoxin determination from the blood of immunized children.

Fraser started out with children who had less than $\frac{1}{600}$ unit of antitoxin per cubic centimeter in their blood. Thirty-five of these he immunized with three doses of fluid toxoid and forty with one dose of alum-

precipitated toxoid. Twelve months after immunization he found only 19 per cent of the children who had received one dose of alum-precipitated toxoid to have more than $\frac{1}{100}$ unit of antitoxin per cubic centimeter of blood, whereas 91 per cent of the children who had received three doses of fluid toxoid showed more than $\frac{1}{100}$ unit.

Farago's study leads one to different conclusions. He examined the blood of ninety-nine subjects who had received three doses of fluid toxoid and the blood of 102 who had received one dose of alum-precipitated toxoid two years prior to the investigation. Both from the point of view of the Schick tests and from the point of view of the antitoxin content of the blood, the children who had received only one dose of alum-precipitated toxoid did just as well as or better than the other group. Two years after immunization the incidence of positive reactions to the Schick test in the groups which had received three doses of fluid toxoid varied from 10 to 14 per cent and the average antitoxin content of the blood from 0.257 to 0.680 unit per cubic centimeter. On the other hand, the groups which had received one dose of alum-precipitated toxoid showed an average of from 0.562 to 0.567 unit of antitoxin per cubic centimeter of blood and a variation of from 4 to 11 per cent in the incidence of positive reactions to the Schick test. The interval between immunization and the determination of the antitoxin content of the blood and the Schick testing was two years in all the groups.

Farago's work combined twice as many cases and covered twice as long an interval between immunization and testing as Fraser's study. On the other hand, of his subjects, only those who received alum-precipitated toxoid had had a positive reaction to the Schick test before immunization. Three fourths of his patients had no initial Schick tests. Fraser's subjects were so selected that before immunization they all had less than $\frac{1}{100}$ unit of diphtheria antitoxin in their blood. Farago used fluid toxoid of 15 Lf per cubic centimeter and alum-precipitated toxoid of from 20 to 28 Lf per cubic centimeter. Fraser used 20 Lf potency for both the fluid and the alum-precipitated toxoid. Therefore, as a whole, Fraser's study, though covering fewer cases than Farago's, was more reliably set up.

Because of such contradictions in the literature about the value of different immunizing agents against diphtheria, a study concerning the duration of immunization against diphtheria was started in New York City. The results are not final yet, therefore, I am going only to touch on them.

The animal work—guinea-pigs being used for the study—was started about a year ago by Dr. Olga Povitzky in the Bureau of Laboratories of the City of New York Department of Health. One group received two or three doses of alum-precipitated toxoid, another group two or three doses of fluid toxoid and a third group one dose each of alum-precipitated and fluid toxoid. The last determination of antitoxin on most of the groups was done from forty-two to forty-six weeks after immunization. The poorest results were obtained on the group of guinea-pigs which received two or three doses of unmodified toxoid. The best results were obtained on the guinea-pigs which received the one dose of alum-precipitated toxoid followed by one dose of fluid toxoid. The group which was immunized with one, two or three doses of alum-precipitated toxoid alone gave results in between the other two groups. In the groups in which one, two or three doses

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¹ Park, W. H. and Anna, W. Pathogenic Microorganisms Philadelphia, Lea & Febiger, 1933.

² Park, W. H. and Zingher, Abraham. Immunity Results Obtained with Diphtheria Toxoid. *Am. J. Dis. Child.* 28: 464 (Oct.) 1924.

³ Glenny, A. T. and Barr, Mollie. *J. Path. & Bact.* 34: 131 (March) 1931.

⁴ Fraser, D. T. and Halpern, A. C. *Canad. Pub. Health J.* 26: 469 (Oct.) 1935.

⁵ Farago, F. *Ztschr. f. Hyg. u. Infektionskr.* 118: 417-428 (June 22) 1936.

of either unmodified or alum-precipitated toxoid were given, three doses gave better results than two and two doses better than one

Interesting as Dr Povitzky's work is, it cannot be considered final, for the following reasons 1 The groups were small An average of only five guinea-pigs was used in each group 2 The last testing occurred only ten and a half months after immunization, and one can hardly study length of immunity in a group of animals observed for such a short time 3 Dr Povitzky pooled the blood of each group and tested the combination instead of the blood of each animal individually By this method the dispersion of the individual variations cannot be studied 4 In some of the groups to be compared, not only the type of toxoid used but the size of the doses differed

Dr Povitzky intends to continue to test these groups of guinea-pigs, if they live, for a second year and also to set up another and better planned experiment which

test, as against only 86 per cent of those immunized with two doses of unmodified toxoid The determination of antitoxin in the blood showed that one dose of alum-precipitated toxoid gave the highest antitoxin titer—about four times higher than that given by two doses of fluid toxoid I fully realize that because the time between immunization and the present study was about one year shorter for the group which received one dose of alum-precipitated toxoid than for the two other groups, the real superiority of alum-precipitated toxoid over the other preparations would be somewhat less than these figures suggest In table 2, three other factors are included on the right hand side which might have had an influence on the outcome of the study 1 The average age of the children when immunization occurred The three groups were fairly comparable in this respect 2 Previous immunization This is known to make it easier to effect subsequent immunization In this respect the group which received two doses of

TABLE 1—Diphtheria Antitoxin Content of the Blood of Guinea-Pigs Immunized with Toxoid (Dr Olga R Povitzky, June 1 1937)

Alum Precipitated Toxoid				Unmodified Toxoid				Combination of Toxoids			
Dosage	Time Between Injections	Time of Bleeding After Last Injection	Antitoxin Content of Blood Unit per Cc	Dosage	Time Between Injections	Time of Bleeding After Last Injection	Antitoxin Content of Blood Unit per Cc	Dosage	Time Between Injections	Time of Bleeding After Last Injection	Antitoxin Content of Blood Unit per Cc
1 dose 1 cc		4 wks 12 wks 44 wks	3+ 1½+ ½								
2 doses 0.5-0.5 cc	2 wks	4 wks 12 wks 42 wks	4+ 1 ½	2 doses 0.5-1 cc	1 wk	4 wks 14 wks 43 wks	½ ¾ ¾	2 doses ½ A P 1 UT	1 wk	3 wks 13 wks 46 wks	3+ 1- 1
								2 doses ½ A P 1 UT	2 wks	3 wks 13 wks 46 wks	4+ 1+ 1½
3 doses 0.25-0.25-0.25 cc	2 wks	3 wks 14 wks 43 wks	7 2 1	3 doses 0.25-0.25-0.5 cc	1 wk	4 wks 10 wks 47 wks	1½ 1- ½				
3 doses 0.25-0.25-0.25 cc	2 wks	4 wks 8 wks 43 wks	3- 2+ 1	3 doses 0.25-0.25-0.5 cc	2 wks	5 wks 10 wks 43 wks	½ ¾ 1½				

Throughout this study toxoid of 30 Lf per cubic centimeter was used
Antitoxin titer of the blood was determined by the modified Ehrlich method
On the average five pigs were in each group Their blood was tested pooled

will escape the weaknesses I have just pointed out in the original one

One piece of work on children which gives a comparison of the three commonly used methods of immunization against diphtheria was undertaken by Dr Camille Kereszturi in the Medical Center of Columbia University This is a small but very careful study and I should therefore like to discuss it in detail

Three groups of children were selected for study who were previously immunized as follows Twenty-one children were given three 1 cc doses of toxin-antitoxin, twenty-two children were given two 1 cc doses of unmodified toxoid, and twenty-one children were given one 1 cc dose of alum-precipitated toxoid All these sixty-four children had positive reactions to the Schick test before immunization The final Schick tests were given to the three groups, respectively, thirty-nine, thirty-seven and twenty-seven months after their last immunization The diphtheria antitoxin content of their blood was determined simultaneously with the last Schick test by Mr Charles K Greenwald in the Research Laboratories of the Department of Health It was found that 95 per cent of the children immunized with three doses of toxin-antitoxin or with one dose of alum-precipitated toxoid had negative reactions to the Schick

toxoid had the most advantageous position and the toxin-antitoxin group the least 3 Repeated Schick tests are known to produce a slight additional immunity, therefore, in the last column the incidence of interval Schick tests is charted From this point of view the group which received one dose of alum-precipitated toxoid had the most and the group which received two doses of unmodified toxoid the least advantage

Analyzing these factors which might influence the results, one has the impression that the one dose of alum-precipitated toxoid gives just as good antitoxin immunity against diphtheria as three doses of toxin-antitoxin or two doses of fluid toxoid Dr Kereszturi feels, however, that she wants to do the Schick test on a larger group of children to see whether the apparent superiority of the one dose of alum-precipitated toxoid is not due to chance because of the small number of cases For her next group she plans to choose children immunized with alum-precipitated toxoid prepared by the City of New York Department of Health rather than by any commercial laboratories As in her study the fluid toxoid used was a city product, with a potency of from 8 to 11 Lf per cubic centimeter, and the alum-precipitated toxoid was a commercial product of from 16 to 22 Lf per cubic centimeter, there is a chance that these differences influenced the outcome of the study

As far as I know, Dr Julius Blum and Dr M C Schroeder of the City of New York Bureau of Laboratories have the largest number of children with an initial positive reaction to the Schick test who have been immunized and afterward given another Schick test. Even their cases, however, are too few to give statistically significant results. The interval between immunization and final Schick tests furthermore, is too short to allow one to draw reliable conclusions as to the duration of the immunity against diphtheria. From table 3 it can be seen that Dr Blum obtained a positive reaction to the Schick test from one to two years after immunization with one dose of 1 cc of alum-precipitated toxoid in 40 per cent of his cases, as against 23 per cent in Dr Schroeder's series. Between two and three years after immunization the difference between the results of Dr Blum and those of Dr Schroeder was even greater, the figures being 82 per cent and 14 per cent. These two investigators used alum-precipitated toxoid prepared by the city and ranging in potency from $8\frac{1}{2}$ to 40 Lf per cubic centimeter.

Dr Blum's series of patients immunized, respectively, by two doses of unmodified toxoid and by three doses of toxin-antitoxin are even smaller. According to his data it appears that the immunity achieved by these two methods is more permanent than that given by the use of one dose of alum-precipitated toxoid. Between two and three years after immunization, only 4 per cent of the patients immunized with toxin-antitoxin and none of those immunized with two doses of fluid toxoid had positive reactions to the Schick test.

There is a tremendous difference between the results of Dr Blum's work and those of Dr Schroeder's. There is an even greater difference between the work of Dr Blum and that of Dr Kereszturi. I do not feel

2 The individual doses of toxin-antitoxin, unmodified toxoid and alum-precipitated toxoid should be the same.

3 The total number of injections with all three products should be the same.

4 The potency of the toxoid to be alum precipitated should be identical with that of the unmodified toxoid.

TABLE 3—Duration of Diphtheria Immunity Produced by Various Methods in Initially Schick Positive Children

	Interval Between Immunization and Schick Test in Years	Dr Blum			Dr Schroeder		
		Total	Number Positive Schick	Per Cent Positive Schick	Total	Number Positive Schick	Per Cent Positive Schick
3 x 1 cc toxin-antitoxin	$1\frac{1}{2}$ 1						
	1 2	39	3	8			
	2 3	72	3	4			
2 x 1 cc fluid toxoid	$\frac{1}{2}$ 1						
	1 2	66	0	7			
	2 3	20	0	0			
1 x 1 cc alum precipitated toxoid	$\frac{1}{2}$ 1				66	12	18
	1 2	13	54	40	103	24	23
	2 3	63	52	82	29	4	14

5 The ages of the children to be immunized should be similar.

6 The Schick testing should be done equally frequently for each group.

7 The length of the experiment should be equal for all three groups and should be five years or more.

8 The number of cases in each group should be large enough to render the conclusions statistically significant.

None of the work done either in this country or elsewhere even approximates these conditions. I am therefore very hesitant to draw conclusions at present about the comparative duration of immunity against diphtheria gained by different methods. While the necessary material is being collected for a more conclusive study, I think the Department of Health of the City of New York is wise to be conservative and go back to a standard of two doses of toxoid, either fluid or alum precipitated.

SUMMARY

1 There is a great deal of controversy in the literature concerning the best method of immunization against diphtheria from the point of view of duration of the immunity achieved.

2 None of the material available at present on this subject is suitable for the deriving of statistically valid conclusions.

3 A small but I believe very important piece of work done on animals by Dr Povitzky suggests that the best results with two doses might be obtained by the use of a 1 cc dose of alum-precipitated toxoid followed by a 1 cc dose of fluid toxoid.

4 Pending conclusive determination of the best method of immunization against diphtheria, the administration of two or three doses of either fluid or alum-precipitated toxoid is the wisest procedure.

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ABSTRACT OF DISCUSSION

DR. M. BERNARD BRAHDY, Mount Vernon, N. Y. Dr. Park has shown that two doses of toxoid give a more lasting immunity than one dose of precipitated toxoid. Whenever possible, multiple dose immunization should be the procedure of choice. The results that we obtained in the parochial schools of Mount Vernon substantiate those presented by Dr. Park. Schick tests were done in a group of 225 children in the lower grades who

TABLE 2—Duration of Diphtheria Immunity Produced by Various Methods in Initially Schick Positive Children (Medical Center of Columbia University Dr Camille Kereszturi)

Material Used for Immunization	Total Number of Cases	Average Interval Between Immunization and Last Schick Test	Per Cent Negative Schick Tests	Average Antitoxin Content of Blood per Cc	Average Age at Immunization	Previous Diphtheria Immunization Before Present One	Interval Between Schick Tests Done
3 x 1 cc toxin-antitoxin	21	39 mo *	0	0.036	36 mo	0%	38%
2 x 1 cc unmodified toxoid	22	37 mo †	86	0.027	39 mo	9%	23%
1 x 1 cc alum precipitated toxoid	21	27 mo *	9	0.11	40 mo	5%	66%

* Standard deviation 10.6

† Standard deviation 2.8

Standard deviation 3.0

prepared to pass any judgment on the results arrived at by these three workers, both because the number of cases dealt with by them is too small to be statistically valid and because the preparations used differed widely in potency. I am convinced that the final answer to the problem of the duration of immunity against diphtheria achieved by various methods cannot be found reliably unless a long time special experiment is set up for this purpose.

Such an experiment, I believe, would have to conform with the following specifications:

1 Only children with an initially positive reaction to the Schick test should be used.

had received three doses of toxin-antitoxin from three to nine years before and 83 per cent were negative. After six months 95 per cent were Schick negative. However, in the children given Schick tests after an interval of a year, 10 per cent of those who had been Schick negative became positive. I wish to emphasize a point frequently overlooked in determining the efficacy of a one dose method of immunization, and that is whether the child had a previous injection of diphtheria antigen. Several years ago Fraser by his work in Toronto demonstrated the importance of knowing whether antitoxin is present in the serum before injecting an antigen, when attempting to determine the immunizing power of that antigen. We had less success than Dr. Park with the use of two doses of fluid toxoid, although we used only 0.5 cc per dose. A group of 110 children of school age who were tested from two to three years after the injections showed an immunity of only 78 per cent. This low figure is in agreement with that reported by Cooke, who recently found 77 per cent immunity in a group of nurses a short time after injection of two doses of 0.5 cc of fluid toxoid. I believe that 0.5 cc of fluid toxoid is too small a dose. Reactions occur more frequently after injections of toxoid than after toxin-antitoxin. It was thought that the intradermal toxoid skin test or Moloney test would indicate those children who would have reactions. Dr. Hayman has correlated the data on the Moloney test and reactions to toxoid injections in 528 children at the Willard Parker Hospital. In children under 4 years of age with a positive skin test (15 per cent) there was usually no reaction following the subcutaneous or intramuscular injection of toxoid. However, in the older age groups either local or general reactions occurred in from 30 to 60 per cent of those with positive Moloney tests (50 per cent). Among those with negative Moloney tests only 6 per cent had reactions after the injection of toxoid. There are certain lessons in Dr. Park's paper which we should carry home. We must not sacrifice efficacy for simplicity—one dose of antigen is a simple but not an effective method of immunization. Until we have a method of immunization which will give a more lasting immunity in most of our children, it is important for us to perform repeated Schick tests. Schick tests should be repeated every few years or at least when we do our preschool medical examination.

DR. JULIUS BLUM, New York. As a co-worker of Dr. Park's, I agree with everything he has said. I wish, however, to emphasize my experiences with alum precipitated toxoid and fluid toxoid for the past few years. The introduction of alum precipitated toxoid by Glenn in England in 1930 and by Havens of the U. S. Public Health Service in 1932 in this country was hailed as the ideal antigen in the active immunization against diphtheria, because only one injection of 1 cc was sufficient to give immunity in 95 per cent or more cases in the comparatively short period of one month. The disadvantages were a nodule, persisting at the site of inoculation, for as long as three months, and occasional abscess formation. The persistence or loss of immunity following this method of immunization was not questioned until Fraser and Halpern published their results in the *Canadian Public Health Journal* for October 1935. These observers found that after one year only 19 per cent of the one dose alum group remained above the $\frac{1}{400}$ level of antitoxin, whereas 91 per cent of the three dose unmodified toxoid group remained above that level. These surprising results led us to give Schick tests to all children who had been immunized with one dose of alum precipitated toxoid. As shown by Dr. Park, in 239 Schick positive children who were immunized with one dose of 1 cc of alum precipitated toxoid, with various preparations containing flocculating values of from 85 to 40 units per cubic centimeter, 26 per cent lost their immunity in nine months, 40 per cent in from one to two years and 82 per cent in from two to three years after inoculation. In 103 children who received two injections of unmodified fluid toxoid of 1 cc. each two weeks apart there was no loss in immunity in seventeen cases at nine months, in 75 per cent in sixty-six cases at from one to two years and no loss in twenty cases at from two to three years. The importance of these observations should be stressed. As a public health measure it is advisable therefore until further data are obtained, that unmodified toxoid be used in immunization against diphtheria. It is advisable that Schick tests be performed on all children

who have received one dose of alum precipitated toxoid and to reimmunize all positive reactors. It is also possible that this loss of immunity may be a factor in the explanation of the increased incidence and the increase in mortality from diphtheria in the first five months of 1937 in the city of New York, where alum precipitated toxoid has been commonly used in the past few years. Until the third week in May during 1937 there were thirty-one deaths from diphtheria in the city of New York, compared to a total of thirty-six for the year 1936.

DR. MAX SCHRODER, New York. I should like to ask Dr. Blum whether all the patients who died of diphtheria in the first half of 1937 had been investigated and found to have received one dose of alum precipitated toxoid.

DR. JULIUS BLUM, New York. I cannot answer that question. These results were published about two weeks ago. I am tolerably sure that the thirty-one deaths did not all occur in persons who were previously injected with alum precipitated toxoid. I do, however, know this: a friend of mine had two cases of diphtheria in his own private practice occurring from one to two years after the administration of alum precipitated toxoid.

DR. WILLIAM H. PARK, New York. The second dose is very effective in that it continues the immunity developed by the first dose. Two doses are much more effective than one dose. I believe that the toxoid precipitate is a better immunizing agent than is the fluid toxoid. However, both are good. I think that in every case the physician should use two doses either of the precipitate or of the fluid toxoid. I hope that every one will retest the children a year after the first immunization to note the results.

OVARIAN FIBROMA WITH ASCITES AND HYDROTHORAX (MEIGS'S SYNDROME)

REPORT OF A CASE

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AND

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(PHILADELPHIA)

Fibroma of the ovary, an uncommon tumor, may rarely be associated with hydrothorax as well as with ascites. The knowledge that this association of pleural effusion with a benign pelvic tumor exists is extremely important from the standpoint both of prognosis and of treatment, since most pelvic tumors causing pleural effusion are malignant and the effusion is the result of pleural or pulmonary metastasis. In the presence of massive pleural effusion it may at times be impossible, even after partial aspiration, to exclude the presence of pulmonary metastasis by x-ray examination. We feel, then, that in these instances the occurrence of hydrothorax with a pelvic tumor justifies abdominal exploration and promises substantial hope of recovery in a considerable group in which the prognosis was previously regarded as hopeless.

Recently Meigs and Cass¹ reported a series of seven cases presenting the syndrome of fluid in the chest in association with ovarian fibroma. In most instances symptoms referable to the chest (shortness of breath or discomfort and pain in the chest) were the chief complaints. In every case the hydrothorax disappeared following removal of the ovarian tumor. Although cases of fibroma of the ovary had previously

From the Surgical and Medical Clinics of the Hospital of the University of Pennsylvania and the Harrison Department of Surgical Research, University of Pennsylvania School of Medicine.
1. Meigs J. V. and Cass J. W. Fibroma of the Ovary with Ascites and Hydrothorax with a Report of Seven Cases. *Am. J. Obst. & Gynec.* 33: 249 (Feb.) 1937.

been recorded in the literature and hydrothorax accompanying this tumor had been mentioned (Hoon,² Salmon,³ Leo,⁴ Meigs⁵), their occurrence and the clinical picture of hydrothorax, which is at times associated with their presence, is not generally recognized. It is Meigs and Cass's article that first reports this syndrome completely and emphasizes its significance.

The importance of recognizing this condition is exemplified by the following case, admitted to the



Fig 1—Massive pleural effusion in right side of chest one day after the first thoracentesis. 1 900 cc of fluid had been removed.

hospital at the time the report of Meigs and Cass¹ appeared and in which a tentative diagnosis of sarcoma of the uterus with metastasis was first made.

REPORT OF CASE

History—E. P., a white woman, aged 57, a widow, admitted to the University of Pennsylvania in the service of Dr. Alfred Stengel Feb. 1, 1937, complained of shortness of breath, fatigue and the loss of 18 per cent of her body weight.

never observed any peripheral edema. There were no digestive symptoms except for moderate anorexia and belching. She had never had any abdominal pain nor had she ever complained of abdominal fullness or distention.

The menopause occurred at the age of 53, four years before the present admission. The menses had begun at 15 and had always been regular. She had had three normal pregnancies. There had been no postmenopausal bleeding or discharge. For many years the patient had been under the care of a physician who had noted a large pelvic tumor in the median line at least eight years previous to her admission, which had not grown appreciably during the interval.

On the admission of the patient to the hospital the temperature was 98 F, pulse rate 90, respiratory rate 20 and blood pressure 130 systolic 85 diastolic. The patient was thin and rather cachectic looking and was prematurely aged. She was myopic and moderately deaf. Examination of the chest revealed signs of massive pleural effusion on the right side. The trachea was deviated somewhat to the left and the apex of the heart was displaced toward the left. There were no other abnormal physical signs in the left side of the chest. All these observations were confirmed by x-ray examination (fig. 1). Abdominal examination indicated the presence of



Fig 2—Appearance seven weeks after operation. No thoracentesis was performed during this time. A small amount of fluid was still present.

Summary of Nine Cases in Literature in Which Hydrothorax Was Associated with Ovarian Fibroma

Case	Author	Age, years	Status	Chief Complaints	Location of		Thoracentesis Number	End Result	Comment
					Tumor	Pleural Effusion			
1	Meigs and Cass ¹	42	Single	Pain in right chest, dyspnea, cough	Right ovary	Right	0	Good	Had two preoperative abdominal paracenteses; considerable amount of ascitic fluid at operation.
2	Meigs and Cass ¹	51	Married	Pain in right chest, cough, abdominal discomfort	Right ovary	Right	5	Good	From six to eight quarts of ascitic fluid found at operation.
3	Meigs and Cass ¹	38	Married	Pain in left chest, abdominal discomfort, dyspnea	Left ovary	Left	5	Good	Five abdominal paracenteses; several quarts of ascitic fluid at operation.
4	Hoon ²	36	Married	Abdominal bloating, anorexia, loss of weight and strength	Right ovary	Bilateral	1	Good	Marked ascites at operation.
5	Hoon ²	31	Married	Abdominal pain and bloating, dyspnea	Right ovary	Right	1	Good	One abdominal paracentesis; several liters of ascitic fluid present at operation.
6	Leo ⁴	64	?	Pain in right chest, dyspnea, cough	Left ovary	Right	Repeated chest taps necessary	Good	Large amount of ascitic fluid at operation.
7	Meigs and Cass ¹	51	Single	Dyspnea, change in bowel habits, weakness	Left ovary	Right	1	Good	A large amount of ascitic fluid at operation.
8	Salmon ³	52	Married	Lower abdominal cramps	Right ovary	Right	1	Good	700 cc of ascitic fluid in abdomen.
9	Rhoads and Terrell	50	Married	Dyspnea, fatigue, weight loss, cough	Right ovary	Right	2	Good	See report of case.

When she became dyspneic a dry cough developed but she had never had hemoptysis or pain in the chest. Palpitation had been noted during attacks of dyspnea and fatigue. She had

a small amount of ascites. In the right upper quadrant the liver was palpable three fingerbreadths below the costal margin. A large round firm tumor extended from the pelvis to a point midway between the symphysis pubis and the umbilicus. On pelvic examination this appeared to be attached to the cervix and was firm, freely movable with the uterus and not tender. The pelvic mass prevented satisfactory palpation of the adnexa. There were no nodules felt in the cul-de-sac. Aside from arthritic changes in the fingers and the finding that the right pupil was smaller than the left, there were no

2. Hoon, M. R. Fibroma of the Ovary. Surg. Gynec. & Obst. 36: 247 (Feb.) 1923.
3. Salmon, U. J. Benign Pelvic Tumors Associated with Ascites and Pleural Effusion. J. Mount Sinai Hosp. 1: 169 (Nov. Dec.) 1934.
4. Leo, C. Processo esudativo pleuro-peritoneale ribelle guarito in seguito a laparotomia per tumore ovarico. Med. prat. 11: 422 (Nov. 30) 1926.
5. Meigs, J. V. Tumor of the Female Pelvic Organ. New York: Macmillan Company, 1914.

other important physical signs. Because of the ascites and hydrothorax a tentative diagnosis of uterine sarcoma with metastases was made.

Thoracentesis was performed five times and fluid was removed from the right pleural cavity as follows: February 2, 1,900 cc.; February 5, 1,000 cc.; February 10, 3,000 cc.; February 19, 2,000 cc.; and March 3, 1,000 cc. After the third thoracentesis, with removal of 3,000 cc. of fluid 1,500 cc.

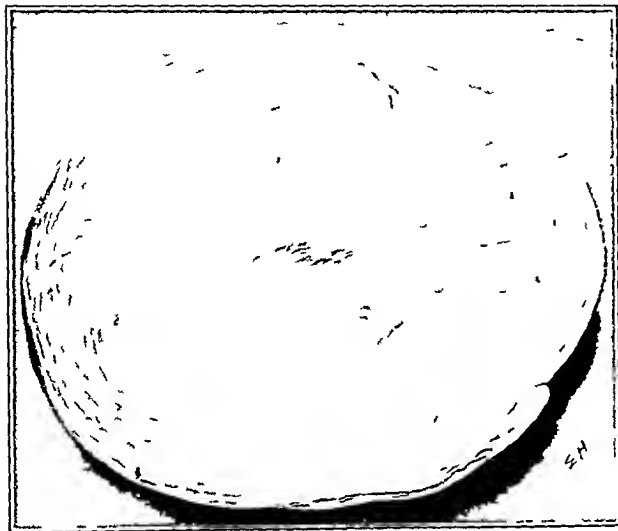


Fig. 3—Cut surface of fibroma of right ovary

of air was injected in an attempt to get better x-ray visualization of the pleura and right lung field. Within nine days x-ray examination of the chest showed reaccumulation of a large amount of fluid. So rapid was this reaccumulation that there was a large mediastinal herniation containing both air and fluid and extending to the midportion of the left lung field. This necessitated removal of 2,000 cc. of fluid, for relief of the dyspnea.

The laboratory data obtained in this case may be summarized as follows: Blood count on admission: red blood cells 5,500,000; white blood cells 18,200; hemoglobin 98 per cent. The differential count was: polymorphonuclear cells 75 per cent, lymphocytes 22 per cent, monocytes 2 per cent, eosinophils 1 per cent. Subsequent blood counts never disclosed a leukocytosis. Repeated urinalyses showed a specific gravity varying from 1.012 to 1.027, an occasional trace of albumin and a moderate number of white blood cells. The Kolmer and Kahn tests were negative for syphilis. The urea nitrogen content of the blood was 15 mg. per hundred cubic centimeters and the blood sugar 78 mg. per hundred cubic centimeters. Serum protein was 6.9 Gm. per hundred cubic centimeters on admission. The sedimentation rate was 22 mm. in sixty minutes.

The pleural fluid obtained February 2 showed a specific gravity of 1.021. It contained 450 cells per cubic millimeter (96 per cent mononuclear and 4 per cent polymorphonuclear) and 1.75 Gm. of protein per liter. February 5 fluid with similar specific gravity showed, on long centrifugation, only an occasional normal red blood cell and a few lymphocytes and polymorphonuclear cells. No mitotic cells were found. None of the cells appeared malignant. February 19 the specific gravity was 1.014, the protein was 1 Gm. per liter and the cell count was 514 cells with 86 per cent mononuclear and 14 per cent polymorphonuclear cells. Cultures of the fluid were repeatedly negative. Guinea-pig inoculation was done on two occasions but tuberculosis did not develop in the animals.

Because numerous x-ray examinations following injections of air did not show the expected pleural or pulmonary metastatic lesion thoracotomy was considered. It did not offer the patient much prospect of benefit, however. At this time the gynecologic consultant, Dr. Franklin Payne, suggested

that the pelvic tumor could be an ovarian fibroma, as in the syndrome just described by Meigs and Cass.¹

Accordingly, March 4 the patient was transferred to the surgical division and exploratory laparotomy was performed by Dr. I. S. Ravdin. A moderate amount, probably in excess of 750 cc., of ascitic fluid was found. The pelvic mass proved to be a tumor of the right ovary measuring 14 by 10.5 by 10 cm. (fig. 2). It was readily removed. Exploration of the remainder of the peritoneal cavity showed no abnormalities. Convalescence from operation was smooth and uneventful. The last pleural aspiration was done on the day before operation, when 1,000 cc. of fluid was removed.

X-ray films of the chest taken on the sixth and fifteenth postoperative days showed progressive diminution in the pleural effusion and reexpansion of the right lung. The patient did not require thoracentesis following the operation. At the time of discharge, March 23, the blood count was entirely normal, the serum protein was 7.3 Gm. per hundred cubic centimeters and the patient was subjectively cured and objectively improved.

Follow-up examination was made April 22, seven weeks following operation. The patient was feeling very well, an excellent appetite had replaced the anorexia, she had no symptoms of breathlessness, cough or fatigue, and she had gained weight. Physical examination was negative except for the signs of a very small amount of fluid or thickened pleura at the right base. X-ray examination at this time showed great



Fig. 4—Section of the tumor ($\times 160$). The smooth muscle appears black in the photomicrograph (Masson stain).

improvement in the appearance of the right lung field. The entire right lung had reexpanded and there was only a small amount of fluid above the dome of the diaphragm. The pleura appeared somewhat thickened (fig. 3).

Pathologic Examination.—The tumor weighed 810 Gm. It was rounded and smooth. The surface was traversed by

few moderately large vessels. The consistency was firm, approximately that of a squash ball. The tumor appeared to be a diffuse enlargement of the ovary. On section (fig 3) the tumor showed whorls of fibrous tissue such as those often seen in uterine fibromyomas. No cystic areas were found. The tumor was hardened in solution of formaldehyde. Sections were cut at right angles to the surface and stained with hematoxylin and eosin. The tumor appeared to be composed of fibrous tissue with numerous fibroblasts. This was interspersed in every low power field with eosin staining areas having the appearance of smooth muscle. The Masson stain, which colors fibroblasts purple and muscle cells green, definitely established the presence of both elements (fig 4). The pathologic diagnosis was stromatogenous fibromyoma of the ovary.

COMMENT

From recorded reports one must judge that fibroma of the ovary is an infrequent tumor. Its incidence is estimated at from 2 to 2.5 per cent of all ovarian tumors (Hoon,² Lynch and Maxwell⁶). It has been reported at ages ranging from 8 to 83 but is quite rare under 25 years and usually occurs between the ages of 30 and 50. It is bilateral in about 20 per cent of the cases, according to Lynch and Maxwell, and, if bilateral, amenorrhea and sterility are usually present. The tumor has been associated with ascites in 40 per cent of Peterson's⁷ eighty-four collected cases, in 25 per cent of Hoon's² series and in only 13.7 per cent of Meigs's⁵ series of twenty-nine cases from the Massachusetts General Hospital. Cachexia is said to be commonly associated with large ovarian fibromas. The largest on record measured 35 by 23 by 15 cm and weighed 6,023 Gm. It was reported by Hoon.² There are only nine cases in which an associated hydrothorax has been reported.

The accompanying table outlines the age, marital status, chief complaint, location of tumor, location of hydrothorax, number of thoracenteses and end results in each case. As in our patient, several of the reported tumors were palpated in the midline. It should be noted that in our patient and in other reported cases the amount of fluid in the chest exceeded the amount of ascitic fluid.

The uniformly good results following removal of the fibroma indicate an etiologic relationship between the tumor and the ascites and hydrothorax. The mechanism of this relationship is not known. Several explanations of the ascites associated with ovarian fibromas seem plausible, but no explanation of the hydrothorax has as yet been afforded.

6 Lynch F W and Maxwell A F. *Pelvic Neoplasms*. New York: D Appleton Century Company, 1922.

7 Peterson R. A Consideration of Ovarian Fibromata Based on a Study of Two Recent Cases and Eighty Two Collected from the Literature. *Am Gynec* 1:45, 1902.

The Shut-In Personality—The type of personality make-up which is particularly in danger of developing into the disease processes of dementia praecox has been described by Hoch as the shut-in personality. We find, in dementia praecox persons who do not have a natural tendency to be open and get into contact with the environment, who are reticent, seclusive who cannot adapt themselves to situations, who are hard to influence, often sensitive and stubborn, but the latter more in a passive than in an active way. They show little interest in what goes on, often do not participate in the pleasures, cares and pursuits of those about them, although often sensitive; they do not let others know what their conflicts are; they do not unburden their minds; are shy, and have a tendency to live in a world of faunias.—Michele Pompeo. *Dementia Praecox*. *Preventable Psychiatric Quart* 11:552 (Oct) 1937.

THE SURGICAL TREATMENT OF
UTERINE MYOMAS

VIRGIL S. COUNSELLER, M.D.

ROCHESTER, MINN.

The mortality in pelvic operations is definitely lower than it is in other types of abdominal operations when the usual surgical principles and standardized techniques are employed, thus, the surgeon may not feel the same degree of hesitancy in undertaking pelvic operations as he does, for instance, in undertaking operations on the upper portion of the abdomen. For these reasons pelvic operations are often performed when there is only the slightest indication for them and at times when there is no real indication at all. It should be remembered that the mortality attending any operation reaches its maximum in the hands of inept or insufficiently trained men.

Although benign lesions of the uterus rarely are difficult to eradicate, there are conflicting ideas regarding the best procedure to follow. I refer principally to the treatment of myomas, which occupy unusual positions with respect to the uterus.

Myomas are most frequently encountered between the ages of 25 and 45 years, the greatest number which require treatment occur after 35 years and the highest

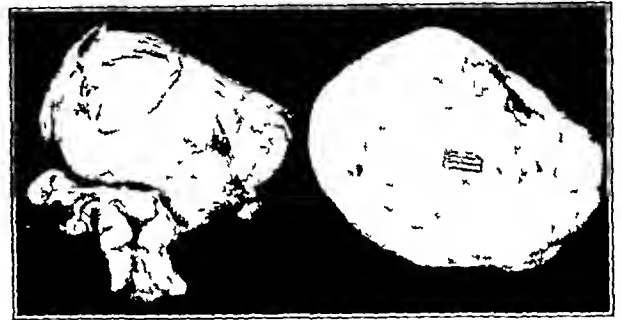


Fig. 1—Huge interligamentous fibroid originating from the left side of the uterus near the internal os; it completely filled the left broad ligament and pelvis and produced marked distortion of the left ureter; there is an absence of myomas in the remaining portion of the uterus.

incidence is at 45 years of age. It is said that after the age of 35 years 20 per cent of all women have some type of myoma. Not all of these will require treatment, however. Myomas do not, as a rule, grow after the menopause but surgical treatment will be required in many cases as a result of degenerative changes.

Some of the fundamental points to keep in mind in undertaking treatment of myomas are their blood supply, their cleavage planes and their manner of growth. Generally speaking, myomas of all sizes are practically devoid of blood vessels. They obtain their blood supply from a thin capillary network from the vessels of the myometrium. For this reason, operation can be undertaken with practically no fear of troublesome hemorrhage. However, this rule does not hold for large pedunculated tumors that have a large pedicle, for the pedicle is usually extremely vascular and large tumors may be soft and filled with excessive amounts of blood, so that retrograde bleeding from the tumor may be severe. When this condition is encountered, much blood, which is valuable to those who are anemic as a

From the Division of Surgery, the Mayo Clinic.
Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Eighty-Eighth Annual Session of the American Medical Association, Atlantic City, N. J., June 9, 1937.

result of repeated hemorrhages may be put back into the circulation immediately by injecting from 1 to 2 cc of solution of posterior pituitary into the tumor before its pedicle is clamped. I have encountered myomas in which the pulsations could actually be palpated in the pedicle of the tumor.

Tumors that are growing in the myometrium compress the musculature of the uterus around the tumor and have the appearance of being encapsulated. The



Fig. 2—Unusual arrangement of myomas which have almost completely destroyed the uterine mucosa; the contour of the peritoneal surface of the uterus is normal.

tumor, which is much firmer than the myometrium can be readily enucleated when the cleavage plane between the tumor and the myometrium is entered. This is best accomplished by holding the tumor firmly with one hand and incising through the myometrium directly down to the tumor. The tumor then is visible and the plane of cleavage can be readily entered. The capillary blood vessels of the capsule can be best controlled by pressure until the defect in the myometrium is closed by a continuous mattress suture. The line of cleavage in myomas clearly distinguishes them from the adenomyomas, since the latter are intimately fused with musculature of the uterus.

The situation of the myoma in relation to the uterus is highly important in selecting the type of surgical treatment. The greater proportion of the tumors are situated in the body of the uterus usually on the anterior or posterior wall. They are usually designated as subserous, interstitial or submucous, according to whether they are under the peritoneum, embedded in the wall of the uterus or under the mucosa. It is considered that they all originate within the myometrium and later extend toward the surface of the uterus or toward the uterine cavity. The question of the direction of extension that any of these tumors take may have a very decided influence on their removal. For instance, those that grow toward the peritoneal cavity may remain on the surface of the uterus or become pedunculated and offer no serious difficulty to their removal, but those which happen to grow from the lower portion of the uterus may extend laterally into the broad ligaments under the bladder or posteriorly behind the peritoneum of the culdesac of Douglas. In the cellular tissues of the broad ligament the tumor may grow without interruption; it may retain its connection to the uterus or it may become completely separated from the uterus. Since the uterine vessels enter the uterus near the internal os and since the most fixed point in the entire course of the ureter from the kidney to the bladder is closely associated with the tumor at this point these structures are pushed laterally during the growth of the tumor and may present real difficulties during the surgical extirpation of such

tumors (fig. 1). It is frequently in connection with the removal of an interligamentous myoma that the ureter is injured. The veins often are enlarged from pressure and under tension resemble a ureter when it is free from blood. There is one maneuver which, if carried out at this point, will definitely determine whether one is handling the ureter or not. If the ureter is snipped or otherwise irritated with the thumb forceps, it forcibly contracts, this distinguishes it from blood vessels. Any attempt to remove a large myoma in this situation without adequate exposure and without opening the broad ligament wide so that important structures can be readily seen, will result in trouble, some hemorrhage and perhaps injury to the ureter and bladder. It has always been my custom to open the broad ligament posteriorly, and then identify and retract the ureter at once so that any troublesome hemorrhage can be immediately controlled without fear of injury to the ureter. The necessity for determining the position of the ureter and protecting it from injury is further enhanced by the fact that it may be the only functioning ureter that the patient has left. The other ureter may be congenitally absent or may have been destroyed by disease or by pressure in the broad ligament, or it may have been injured in a previous pelvic operation. The discovery of a ureter which has been destroyed by a previous pelvic procedure is not at all uncommon.

A myoma that extends from the posterior wall of the uterus far down behind the peritoneum of the culdesac of Douglas is one that presents several technical difficulties in its removal. Again the ureters are both pushed laterally, and the tumor grows upward in the mesentery of the sigmoid colon and the cecum. It is usually this type of myoma that is occasionally exposed and considered inoperable, the patient is then subjected to radium or roentgen therapy. If exposure is adequate and the condition thoroughly recognized, the tumor can be removed by careful dissection after retraction

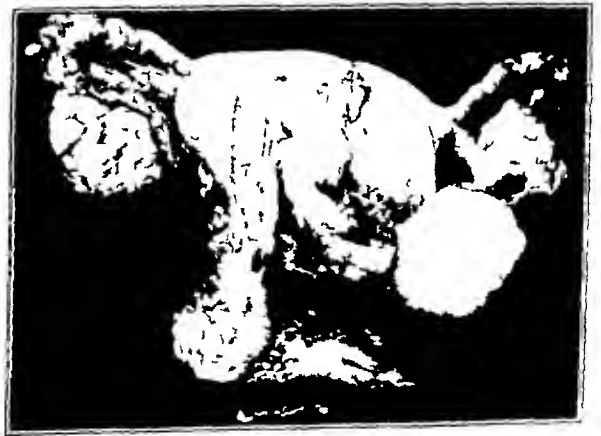


Fig. 3—Pedunculated myoma with pedicle attached to the fundus; the cervix is large and patulous and the site of ulceration stained at necropsy.

of the blood vessels in the fat of the mesentery of the colon. The safest method is to begin the removal by cutting through the peritoneum near the point of origin of the tumor and working laterally, always keeping in intimate contact with the wall of the tumor.

A myoma that originates from the anterior uterine wall near the cervix may cause considerable distortion of the bladder. It has been my experience that

the posterior wall of the bladder is often intimately attached to the fascial tissues adjacent to the fibroid which interferes with the separation of the bladder. If in separating the bladder the wall of this organ is injured, it is a much safer procedure to resect the wall of the bladder, leave it attached to the myoma, and then close the bladder with two rows of number 1 plain

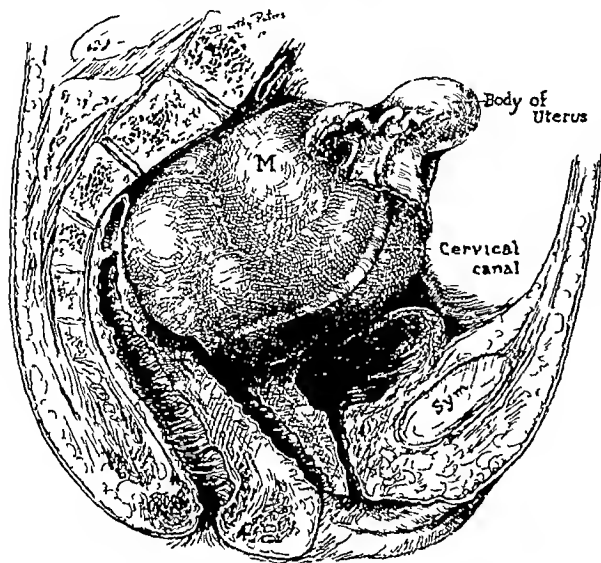


Fig 4—Diagrammatic sketch of cervical myoma in a young woman whose pelvic organs were otherwise normal

catgut sutures. This may seem like a major procedure, but it is far safer than to run the risk of the development of a vesical fistula in a few days, as a result of the injury of the vesical wall or a persistent cystitis, which often follows extensive trauma, or to run the risk of the occurrence of secondary hemorrhages within the mucosa of the bladder.

Myomas that grow toward the uterine cavity form a distinct group and their surgical management is therefore different. As they extend toward the uterine cavity they become fixed beneath the mucosa, therefore they have been called "submucosal myomas" (fig 2). Some maintain this position, while others, on account of contraction of the uterine wall and the growth of the tumor, become pedunculated and extend at varying distances through the cervical canal. The submucous myoma is frequently troublesome and difficult to identify. Bimanual examination will perhaps show a normal contour of the uterus, although the organ may be somewhat larger than normal. If the tumor is small it is only after great care that it is identified with the curet. I am convinced that such tumors are often overlooked, if so, the excessive menorrhagia and metrorrhagia continue as they did before. Such patients too often are given a castrating dose of radium or roentgen rays. If the patient is already in the menopause this treatment may be adequate and proper, but continued spotting and frank hemorrhage not infrequently follow such treatment. In cases in which the patients are less than 40 years of age, these myomas should be removed surgically. Two methods are available. First if the cervix is thoroughly dilated the tumor may be grasped with a tenaculum, and then with one hand on the fundus to hold it in position the tumor may be extracted from the uterine wall by careful rotation and gentle traction. Subsequent bleeding is rarely of major importance and is usually controlled by packing

the uterus with gauze for from twenty-four to forty-eight hours. Second, if this maneuver is unsuccessful, the myoma should be removed by abdominal myomectomy and always by the latter procedure if there are other myomas in the myometrium or subserous myomas, which also should be removed.

Pedunculated submucous myomas behave exactly as does a foreign body in the uterine cavity. As the tumor increases in size the uterus endeavors to expel it, the same as it does a large blood clot. There is often a disturbance of the blood supply of the uterus, which favors necrosis, secondary infection and softening. The cervix then becomes soft, enlarged, patulous and inflamed (fig 3). If the pedicle becomes sufficiently elongated the myoma may be extruded into the vagina, where it undergoes ulceration, and bleeding is often of a serious nature. The vaginal discharge becomes excessive and the odor resembles that of an ulcerating carcinoma of the cervix, for which the myoma may be easily mistaken. Vaginal myomectomy is the only procedure ever to be employed in the removal of such myomas. If the patient is a woman who has been pregnant, adequate exposure is always possible, but if she is a nullipara it may be necessary to secure exposure by deep lateral episiotomy. The tumor should be grasped with the hand and not with instruments, for such tumors are soft, friable and hemorrhagic. The tumor may be gently pulled downward and the pedicle inspected. The cervix is often large and soft enough to permit one to examine the interior of the uterine cavity by inserting the index finger along the pedicle. The only other point which must be noted in the complete removal of such tumors is the union of the pedicle with the uterine wall. Should this be disregarded, an effort to remove all the pedicle may inadvertently result in an opening through the uterine fundus, which is also very soft. The point of attachment can usually be detected with good exposure and direct light. It is

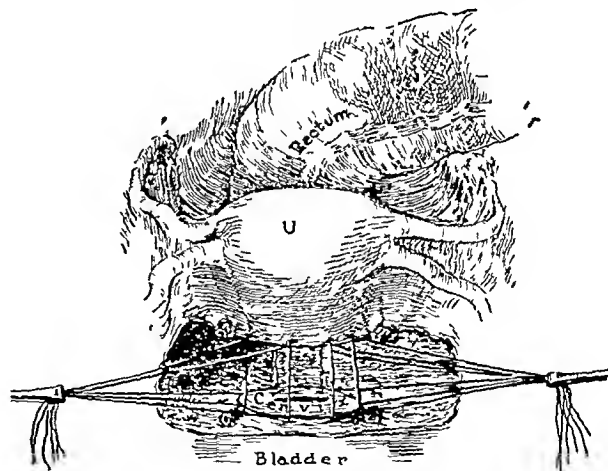


Fig 5—Successful removal of the tumor with reattachment of a rim of cervical tissue to the uterus. menstrual function was normal

rarely necessary to ligate or suture the stump of the pedicle to control bleeding. Following removal of the tumor, the interior of the uterus should be cleansed with some antiseptic solution such as an aqueous solution of merthiolate or mercurochrome, or a weak solution of iodine. If bleeding seems excessive, packing with gauze is usually sufficient.

If these pedunculated myomas are associated with others which necessitate an abdominal hysterectomy,

this procedure must most emphatically be deferred several weeks until the cervix has assumed a normal consistency and the uterus is free from infection. It is decidedly dangerous to attempt a total abdominal hysterectomy when there is a pedunculated myoma extending into the vagina, since the tumor is always infected and peritonitis is almost certain to follow



Fig. 6—Myoma originating from the posterior lip of the cervix, the uterus which contained small myomas was situated on top of the cervical myoma near the umbilicus

The same is true if hysterectomy is attempted too soon following vaginal myomectomy, as the lymphatics will continue to contain streptococci, which may produce a fulminating peritonitis and death of the patient.

Cervical myomas, which fortunately are not common, present one of the most difficult surgical situations in gynecology. Their removal is necessary and always difficult on account of their position and the inherent danger of injuring adjacent structures. These tumors, according to Robert Mayer, are unlike the fundal myomas in that they are not influenced by the sex hormones and therefore do not undergo regression after the menopause. When excessive hemorrhages develop they are often treated by roentgen rays, on account of the technical difficulties presented in their surgical removal which as a rule is inadequate. Unlike the pedunculated myomas which protrude through the cervix they are not infected, therefore, surgical exploration can be instituted immediately. On account of their tendency to grow backward toward the culdesac of Douglas and upward, the abdominal type of hysterectomy is preferable. Although myomectomy is possible (figs. 4 and 5) if the fundus of the uterus is not involved by the myoma it will occupy a position on top of the tumor and usually will be situated near the umbilicus (fig. 6). The ureters, bladder and rectosigmoid must be carefully mobilized during the removal of the uterus.

Abdominal myomectomy, subtotal hysterectomy and total hysterectomy may also be considered in the treatment of myomas. The choice of any of these procedures depends on the size, number and situation of the tumors, on the age of the patient and on the con-

dition of the cervix. During the sexual life of the patient it is imperative to conserve both the menstrual and the reproductive function. Myomectomy is the only conservative procedure and the operation of choice in the third and fourth decades of life. When tumors are large and multiple myomectomy would result in considerable destruction of the uterus, myomectomy may best be replaced by hysterectomy if the patient is past 37 years of age. If hysterectomy is advisable before this period it is evidence that the patient has delayed seeking treatment or has been ill advised. In this connection it must be remembered that not all myomas will require surgical treatment, one or two small tumors, which occasionally are situated in the myometrium or in a subserous position, do not induce any disturbance in the menses and furthermore may become more or less quiescent and remain so throughout the patient's life. Such tumors will require periodic examinations to determine their size and consistency. In no event are these tumors to be treated by radium or roentgen rays during the sexual life of the patient. For such treatment to be effective it is necessary to administer a castrating dose, which is decidedly not indicated during this period of life. Some of the most dissatisfied patients are those who have received applications of radium, for bleeding due to myomas, when they were in their early thirties. In such cases the ovary usually regains some of its function and continuous spotting or excessive bleeding returns. Myomectomy, which must always be given consideration in cases in which removal of the tumors is indicated, is one of the most satisfactory operations in gynecology. However, it is more difficult to perform than subtotal hysterectomy, since the technic of the former is necessarily varied to suit the condition encountered. Bleeding need not deter the surgeon, as it can be adequately controlled if an assistant maintains gentle traction on the fundus

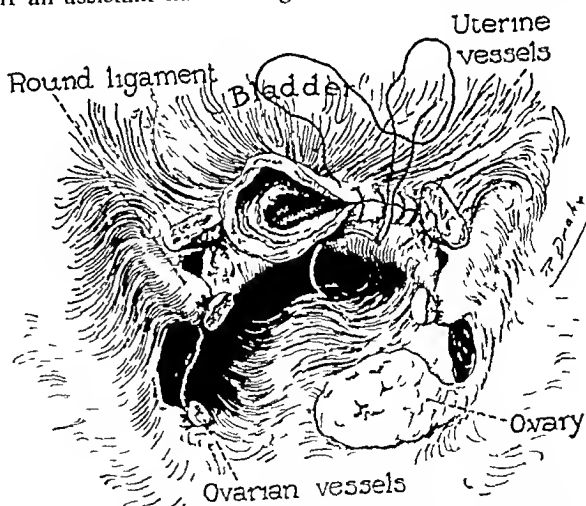


Fig. 7—Vaginal mucosa is inverted by running mattress suture and leaving the upper end of the vagina broad. Broad ligament are shortened and approximated with uterine vessels to the angles of vagina.

of the uterus during the operation. The removal of a degenerating myoma from the pregnant uterus is liable to interfere with normal labor and should not be considered lightly, although it can be done without much risk of miscarriage if extreme care is exercised. The contraction of the uterus from manipulation distinctly clearly the line of cleavage from the fibroid, since the myoma does not enter into the contraction to the same extent as does the uterus.

All large myomas and all small ones except submucous pedunculated myomas, which produce symptoms after the patient is 40 years of age, are best treated by the radical procedure of hysterectomy. Myomectomy may be considered if the patient prefers that the sexual organs be left intact. The operation of partial defundectomy has been advised in such cases but I do not consider it a satisfactory procedure.

Irradiation is often utilized in the treatment of some of the smaller fibroids, especially if it has been previously determined that they are incidental and not primarily the cause of the uterine bleeding. Irradiation at this period of life will be more likely to effect a cure than it will in the earlier years of life, since the recuperative power of the ovary has practically ended. Tumors of large size or those which increase in size or become tender following the menopause should be removed surgically. The same holds true for myomas that are associated with adnexal tumors or pelvic inflammatory disease.

The question of whether a subtotal or total hysterectomy should be performed when removal of the uterus is indicated for benign conditions should be determined by the condition of the cervix of the uterus. There is no more logic in leaving an infected, lacerated and eroded cervix when the uterine corpus is removed than there is to fail to extract an infected dental root which is a constant source of septic absorption into the general system. Neither is it logical to believe that total hysterectomy should always be done to prevent the occurrence of carcinoma on the retained cervical stump, since the incidence of such an occurrence is relatively small. It is rather generally agreed among gynecologists that the vagina is left in a more normal condition if a normal cervical stump is retained than it is if the cervix is removed. The cervix, of course, should be firm and free from cysts, lacerations and erosions. A cervix that meets all these requirements is not frequently found among multiparous women but is rather the rule among nulliparas. When a diseased cervical stump has been left following subtotal hysterectomy it should be destroyed by the surgical cautery. I prefer to remove it surgically by the vaginal route, as the convalescence is much shorter and infinitely more comfortable if it is removed in this manner.

When total hysterectomy is performed there is of necessity a greater disturbance in the function of the bladder, as some of the branches of the presacral nerve which supply the base of the bladder reach it by way of the uterosacral ligaments and pass around the cervix to reach the wall of the bladder. These nerves are divided when the uterosacral ligaments are severed. Furthermore, some dysfunction results from pushing the bladder away from the anterior wall of the uterine cervix. Several days are often required for the bladder to compensate for this dysfunction, which usually interferes with complete emptying of the bladder.

The support of the vaginal vault following total hysterectomy is a procedure of major importance. The discomfort which ensues from faulty support of the vaginal vault is intolerable and most difficult to remedy. As the vagina prolapses the bladder goes with it, this accounts for residual urine, infection and dragging and bearing down sensations. The condition is preventable if the pelvic fascia is accurately attached to the sides of the vagina. The other uterine ligaments are of minor importance in comparison to the fascia

within the broad ligaments (figs 7 and 8). Briefly, it is sufficient to say that the pelvic fascia has two attachments with regard to the vagina and cervix, namely, the bony pelvic wall and the sides of the vagina and uterine cervix. During parturition the vaginal and uterine attachment may be partially severed and permit considerable free movement of the uterus and vagina; therefore the total removal of the uterus must be so conducted that the pelvic fascia which is separated from the cervix and vagina, must be carefully measured and approximated exactly at the upper and outer angles of the inverted vaginal mucosa. If the anterior vaginal wall is short as it occasionally is, it may be lengthened by evaginating, so to speak, the cervix from the vagina by incising the tissues above the vesicovaginal fold of the mucous membrane of the vagina. Broad ligaments that are brought over the inverted vaginal vault are never as effective in their support as they are when shortened and left in their lateral position at the sides of the vagina. After the broad ligaments have been

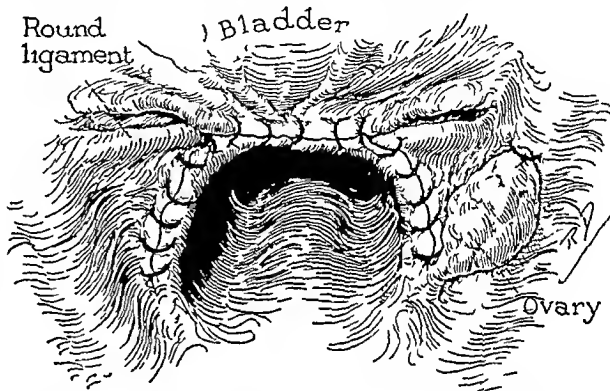


Fig 8—Complete peritonealization. All vessels of ovarian ligament have been removed. The round ligaments and broad ligaments have been shortened and approximated at the angles of the vagina, providing a broad base for the bladder and excellent support for the vagina.

carefully approximated, the other uterine ligaments may be attached according to the usual standard techniques.

CONCLUSIONS

I wish to emphasize that, since operations on the uterus occasioned by myomas are among the most frequent gynecologic procedures, each patient must be carefully studied and the method of procedure determined by the position of the myoma, whether the tumors are single or multiple, and by the age of the patient. If hysterectomy is indicated, a careful inspection of the cervix is obvious in choosing between the total or subtotal technique. Finally, the support of the cervical stump or vaginal vault, as the case may be, may determine the success or failure of the operation so far as the patient is concerned.

ABSTRACT OF DISCUSSION

DR THOMAS S CULLEN, Baltimore. After spending my spare time for nine years in studying nearly 1,700 cases of uterine fibroid tumors encountered in the practice of Dr Howard A. Kelly, in my own and in those of our associates, Dr Kelly and I in 1909 published the results in a volume entitled "Myomata of the Uterus." In it the clinical side, the operative results, the follow up and the histology were fully considered. In our publication of 1909, supravaginal hysterectomy was advised in the cases in which the cervix was not diseased. We still favor the supravaginal removal in the majority of the cases. I was interested to learn that in the Mayo Clinic the same rule is followed, unless contraindications exist.

For years we have advocated the immediate opening of the uterus on removal. Occasionally an early carcinoma of the body will be detected, and then the cervical stump will immediately be removed. In any case in which the possibility of sarcoma exists the myomas are bisected immediately and if there is any suspicion of malignancy the cervix also is removed. Supravaginal hysterectomy has given us the best results. In clinics in which many Negro women are operated on we frequently find dense pelvic inflammatory masses complicating removal of the uterus. In such cases a total hysterectomy would add greatly to the danger. In many of these cases, before removal of the uterus, it would be almost impossible to locate the ureters. The vermicular contraction of the ureter on gentle teasing was especially emphasized by Dr. Kelly in the early days of the Johns Hopkins University School of Medicine, and for over thirty years this has been called the "Kelly sign." When a myoma is found spreading out in one broad ligament, Dr. Kelly pointed out that, if the operator starts on the opposite side and then cuts across the cervix, the broad ligament tumor can be rolled out with little or no danger of injuring the ureter. This was called the "right to left, or left-to-right operation." In those cases in which a single large myoma literally fills the pelvis and no vantage point can be obtained I have found it advisable to shell out this large tumor. Half a dozen spurting vessels have to be caught, after which there is ample room to complete the supravaginal hysterectomy. In other cases in which the myomatous uterus is densely adherent posteriorly, or in which an abscess in the myoma opens into a loop of bowel but in which the cervix is relatively normal, I have found it advisable to push down the bladder, cut across the cervix, clamp and cut the uterine vessels, clamp and cut the ovarian vessels, pack the pelvis with gauze and then loosen up the myomatous uterus. When the uterus is large, contains sloughing, submucous myomas that do not project into the cervical canal, the uterus is freed as for a supravaginal hysterectomy. Next a mattress suture is passed through the cervix and tied, and the uterus cut across below the suture. This procedure ensures that none of the contents of the uterus can escape when the cervix is cut across. In such a case we invariably leave one drain in the pelvis, bringing its outer end out through the abdominal incision.

DR. LOUIS E. PHANEUF, Boston. Dr. Counsellor's paper covers the surgical treatment of uterine myomas exceedingly well. The injection of solution of posterior pituitary into the tumor before clamping a vascular pedicle in order to return all possible blood to the circulation is a valuable procedure, which, in my opinion, is not resorted to often enough. The ureter should be identified during an operation for an intraligamentous myoma. In large myomas retrograde pyelo-ureterography will give considerable information on the relationship of the ureters to the tumor. In some instances it is of value to catheterize the ureters sometimes before operation to determine this relationship. In the surgical management of pedunculated myomas extruded into the vagina, Dr. Counsellor does not mention vaginal hysterotomy. This method has served me well in a number of instances, especially when the tumors had large pedicles with a high attachment within the uterine cavity. I agree that it is inadvisable to do an abdominal hysterectomy in the presence of a pedunculated myoma extruded into the vagina because of the danger of sepsis and also that following a vaginal myomectomy an abdominal hysterectomy should not be undertaken until the cervix is completely healed. Cervical myomas may present numerous surgical difficulties. My own practice is to enucleate them and identify the ureters and uterine vessels before proceeding with a hysterectomy. While I agree with Dr. Counsellor that myomectomy is one of the most satisfactory operations in gynecology, the fact remains that this intervention carries more danger from sepsis and hemorrhage than supravaginal and total hysterectomy. Treatment of myomas is surgical whenever possible. In my hands irradiation is reserved for women considered poor surgical risks and for those whose tumors are not complicated by adnexal disease and are not larger than a three months gestation. I also agree with Dr. Counsellor in what he has said regarding subtotal versus total hysterectomy.

DR. HENRY SCHMITZ, Chicago. The forms of treatment in uterine myomas are as diversified as the types of surgical treatment. The result is that the opinions of the efficacy of a given treatment vary, and confusion is prevalent. The selection of the indicated method of treatment will be facilitated by a study of the symptoms in relation to the age and the physical condition. The presenting symptoms are menorrhagia or hypermenorrhea, metrorrhagia and pain. The latter is either a pressure pain or an inflammatory pain. Menorrhagia is associated with the intramural myoma but is frequently an expression of endocrine dysfunction. Metrorrhagia occurs with loss of surface continuity of the endometrium often because of a complicating carcinoma or a degeneration of the myoma or a pedunculated submucous myoma. Pain is due either to limitation of space when the tumor becomes incarcerated in the bony pelvis on account of cervical isthmus intraligamentary or subperitoneal development or to the weight of a large myoma. Inflammatory pain is associated with degeneration of the myoma, axial rotation of the pedunculated myoma, and endogenous or exogenous infection. The age period is important, as radical procedures of treatment should not be used in the young and mature woman in whom sex functions especially fertility, should be conserved. The only treatment which accomplishes removal of growth and conservation of all functions is myomectomy. In all other age groups, that is the menopausal and the senile, radical measures of treatment are indicated. The menorrhagic myoma indicates conservative treatment, that is, palliation or myomectomy during the juvenile and mature age groups and radiologic treatment during the menopausal age period. The metrorrhagic myomas indicate myomectomy during the juvenile and mature age groups, and hysterectomy during the menopausal and senile age groups. The painful myomas always demand surgical intervention, as the kind of degeneration or complication in the myoma cannot be diagnosed positively by examination.

DR. VIRGIL S. COUNSELLER, Rochester, Minn. I want to express my appreciation to Drs. Cullen, Phaneuf and Schmitz for their discussion of this paper. It is from such men, who have spent years in the management of these conditions and who have written extensively that physicians gain information and correct advice. The question of hysterotomy, which Dr. Phaneuf has mentioned, I did not refer to in my paper. It is quite right that it should have been mentioned, because, as Dr. Phaneuf states, it is a very satisfactory approach to some pedunculated tumor, situated high, in which the cervix has not softened so that one could gain approach to the peduncle, and it is necessary to remove some of these tumors on account of inflammation and bleeding long before the cervix has softened sufficiently to expose the peduncle. Perhaps I am a little over-enthusiastic about myomectomy, because I feel that conservative procedures in the case of women under 35 should always be carried out, but judgment must be exercised, as Dr. Phaneuf and Dr. Cullen have stated about whether one does myomectomy or not. It is a much more difficult procedure than hysterectomy, because the technique has to be varied to conform to the situation encountered. A good many years ago Dr. W. J. Mayo reviewed his results in 700 cases in which myomectomy was performed and he brought out some interesting things which I have tried to utilize. One of them was the prevention of hemorrhage by advising and seeing to it that the assistant maintained traction on the uterus at all times. If there is extreme traction bleeding is not prevented but it is reduced so that one can cut directly down to the myoma keeping in mind that the vessels are in the cleavage plane and that myomas in them cleave relatively free from blood. If one is in the proper cleavage plane, one can enucleate them and their enucleability is distinguished from that of adenomyomas which cannot be enucleated. Dr. Mayo likewise pointed out that if one does not suture too tightly so that the tissue is not blanched infection and necrosis are not apt to occur. I believe that myomectomy is an operation which must be carried out by those who are experienced pelvic surgeons, except of course in the case of tumors that are easy to clip off.

HEMATOGENOUS PULMONARY
TUBERCULOSIS

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My purpose in this article is to draw the attention of the medical profession to a paradox that is occasionally encountered in comparing the roentgenologic and the clinical appearances in certain cases of pulmonary dissemination of the tubercle bacillus. A roentgenogram of the lungs invaded by such a dissemination will show miliary seeding throughout both lungs and the roentgenologist will justly report "miliary tuberculosis." The clinical picture, however, while that of miliary tuberculosis in some cases, will show very little to justify such a diagnosis in others. Though the phthisiologist is familiar with this benign type of hematogenous tuberculosis and the theories of its pathogenesis, the condition is frequently puzzling to the general practitioner, who is usually the first to see the patient. Indeed, having received a report from the roentgenologist that the patient is afflicted with miliary tuberculosis, he is apt to give a grave prognosis only to find some of these patients, months later, well and very much alive, while in another case with a similar roentgen diagnosis death may ensue within a few weeks to a few months. The difficulty lies in the fact that the fatal type of miliary tuberculosis and the comparatively benign dissemination "hematogenous tuberculosis" appear nearly alike roentgenographically, and one must turn to the clinical signs and symptoms and possibly to a period of observation as the basis for a differential diagnosis.

Pulmonary hematogenous tuberculosis is a pulmonary dissemination of the bacillus of tuberculosis by way of the lesser blood circle mainly in contradistinction to generalized miliary tuberculosis, which is a widespread dissemination of the bacillus of tuberculosis by way of both the greater and the lesser blood circles.

As has been repeatedly proved, tubercle bacilli circulate in the blood stream of many tuberculous patients not ill with miliary tuberculosis. Similarly tubercles may be found in the abdominal viscera, especially the spleen and kidneys at postmortem examinations of patients who died of tuberculous pneumonia or phthisis without any clinical or pathologic evidence of active generalized miliary tuberculosis. Solitary tubercles are also found in systems other than the pulmonary in many cases of hematogenous tuberculosis, but they are few in number and show no evidence of progression, as is seen in generalized miliary tuberculosis. What is responsible for the take and implantation of the tubercle bacillus at some time and not at another, or the involvement of a single system or organ (genito-urinary, bone, joint) or generalized involvement (miliary tuberculosis) and whether it is the number of organisms thrown into the blood stream, their virulence or the state of immunity in the patient's body as a whole or the immunity of a single organ or system are matters of lively debate among the several schools of phthisiologists and pathologists here and abroad. The subject is exceedingly interesting but does not enter into the scope of this paper.

The term "hematogenous tuberculosis" for this form of localized pulmonary tuberculosis is a misnomer, since miliary generalized tuberculosis, genito-urinary tuber-

culosis, tuberculosis of the bones and joints and the like are all blood borne infections and a more suitable, though not absolutely correct term, would be "lesser circle tuberculosis." However the term hematogenous tuberculosis had been in use by phthisiologists for the more benign blood stream dissemination limited clinically to the lungs, while the fatal widespread form is known as "generalized miliary tuberculosis."

HISTORY

Villemin showed in 1865 that active tuberculosis can develop in animals when they are injected with the blood of tuberculous patients not ill with miliary tuberculosis. Wunderlich, Koening and Cornet and others have reported cases of healed miliary tuberculosis. Sigg and Burckhardt have made similar reports with autopsy controls. Assmann reported in 1913 a case of healed miliary tuberculosis with roentgenographic evidence. Grau, Muralt, Klingenstein, Diel and others were the earliest observers in the last two decades to report cases of hematogenous tuberculous disseminations with serial roentgenograms showing retrogression. Von Graeff, Braeuning and Redeker in Germany and James Alexander Miller and Max Punnet in this country have in the last decade contributed much to our knowledge of the disease.

ETIOLOGY

Pulmonary hematogenous tuberculosis occurs most frequently during childhood and in young adults who were heavily exposed to tuberculosis during childhood. Repeated attacks are not infrequent. Continued close contact with open cases of tuberculosis favors repeated disseminations, especially in childhood. Undernourishment and general poor health are additional predisposing factors.



FIG. 1 (case 5).—Condition on admission. Widespread nodular dissemination miliary in character through both lungs. Enlarged tracheobronchial glands with perifocal reaction. Sputum positive no fever.

PATHOGENESIS

During the primary tuberculous infection the lymphatics that drain the tuberculous area carry tubercle bacilli to the regional lymph nodes, which are not perfect filters, some of the organisms enter the blood stream. When the nodes become tuberculous and caseate, the tubercle bacilli pass up the chain of lymph nodes until they reach the venous angle into which the lymphatic trunks empty. The infectious organisms invade the venous blood going to the right side of the heart and are then disseminated by way of the pulmonary arteries through the lung fields. Most of the tubercle bacilli lodge in the pulmonary parenchyma and but few organisms enter the pulmonary venous circulation, to be carried to some distant organ by the general circulation.

Reactivation of apparently healed tuberculous hilar nodes in young adults who have been heavily exposed to open tuberculosis during childhood may lead to hematogenous dissemination similar to the cases seen in childhood.

PATHOLOGY

The tubercle bacilli lodge in the pulmonary parenchyma and may call forth either an exudative reaction characterized by round cell infiltration or a productive reaction characterized by large mononuclear cells and giant cells (typical tubercles), or a mixture of the two types of reaction. Fibrosis of the interstitial structures is seen early. Dense round cell infiltration is frequently

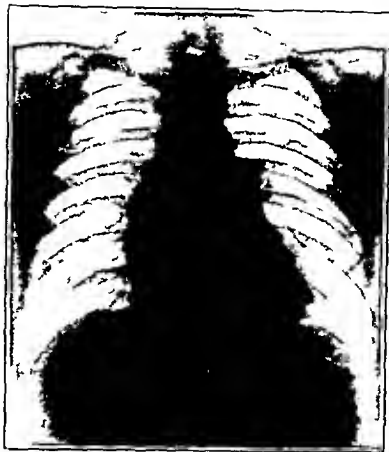


Fig 2 (case 5).—Appearance four months later. Marked clearing of the nodular infiltrations with the disappearance of the perifocal reaction around the still enlarged tracheobronchial lymph nodes. Sputum negative.

seen along the vesicle wall, especially in the neighborhood of the blood capillaries. The interlobular septums become thickened and may show organized tubercles. The bronchioles show fibrosis along their outer walls. All lesions usually appear to be of the same age, when the lesions are of different ages, in the process of evolution, it suggests repeated dissemination. The uninvolved pulmonary parenchyma interposed between the minute fibrosing nodules shows obstructive emphysema going on simultaneously with the fibrosis in the involved areas. The tracheobronchial lymph nodes are either still enlarged and often caseous or they may be infiltrated with calcium salts.

EVOLUTION

Hematogenous dissemination can clear without leaving a trace (fig 2) that can be detected on physical examination or in some cases even roentgenographically. Pathologically, however, permanent parenchymal changes remain but their etiologic factor may be difficult to prove. From this extreme the evolutionary process may gradually lead to the other extreme of conglomeration of tubercles, caseation, softening, liquefaction, excavation, bronchogenic dissemination and eventually phthisis. The disease may become arrested in any of its evolutionary stages and never recur, or the patient may suffer repeated attacks of hematogenous dissemination, each succeeding spread involving more pulmonary parenchyma, increasing the emphysema and the interstitial fibrosis until a time is reached when, though the tuberculous process may be completely arrested, the patient becomes an invalid because of a state of partial anoxemia due to marked loss of lung tissue. He may die of heart failure due to exhaustion of the overtaxed heart muscle.

SYMPTOMS

The symptoms at the onset vary with the acuteness of the disease but they are seldom dramatic. The onset may be indefinite as to time, in some cases the condition may be discovered accidentally or on routine examination. There is usually a history of either recent pleurisy or repeated attacks of pleurisy in the past. There may be a rise in temperature of from 0.5 to 1.5 degrees, lasting a few days. Some dyspnea may be present though not always noted by the patient until his attention is called to it. In extensive disseminations there

may be some cyanosis. There is usually a moderate loss in weight and some dry cough. Expectoration is scant or entirely absent.

SIGNS

The patient is usually a child or a young adult moderately well nourished and well developed. Expansion of the chest is usually limited but equal bilaterally. The supraclavicular and infraclavicular fossae are well filled. The trachea is in the midline, palpation gives no additional information. The percussion note is normal or slightly hyperresonant. On auscultation one finds that the breath sounds are somewhat harsh and that there are fine subcrepitant rales extending from the apex to the base of each lung and more numerous in the upper halves. The blood picture is usually normal. The red cell sedimentation rate is usually above normal. The tuberculin test may be negative even to 1 mg of old tuberculin but will invariably become positive within a few weeks or within several months. The sputum, if there is any, is usually negative on direct examination of the concentrated specimen and on animal inoculation. The urine is negative for tubercle bacilli. The vital capacity is always lowered in some cases as much as 50 per cent.

CLINICAL COURSE

If the process is retrogressive the aforementioned signs and symptoms may subside within a few months and physical examination after retrogression is usually negative. The vital capacity usually increases, since the alveoli involved by nonspecific exudative reaction resume normal functioning after clearing. When the process is progressive expectoration usually appears but the sputum may never become positive for tubercle bacilli if the disease becomes arrested in the precavernous stage. When cavitation occurs the sputum becomes positive for tubercle bacilli. Bronchogenic dissemination manifested by fever, sweats, coarse and fine rales and pathologic breath sounds may appear in some cases, in others, spread of the disease does not occur in spite of persistence of the cavity for months. The cavity may eventually disappear without evidence of spread by way of the bronchi. Cavitation may occur concomitant with retrogression (figs 5, 6 and 7). Fulminating hematogenous tuberculosis is infrequent, it is usually progressive and fatal.

Hematogenous disseminations recur. Rales reappear with every new dissemination and disappear after clearing of the infiltration. When the individual foci conglomerate and undergo fibrous change, the rales, especially in the upper halves of the lungs, may persist throughout life even though the disease has healed and remained arrested. If the hematogenous invasions do not go to a phthisical evolution, i. e. if no progressive bronchogenic spreads occur, the pathologic physiology even in far advanced disease produces hardly a change in the contour of the chest or in the position of the intrathoracic organs so characteristic of chronic tubercu-

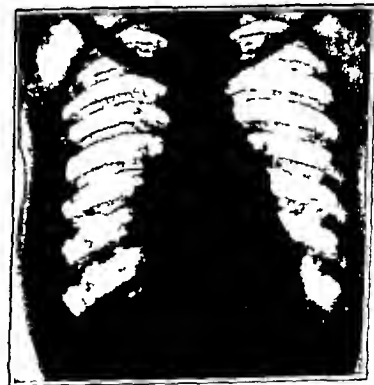


Fig 3 (case 6).—Condition on admission. Widespread very fine nodular dissemination miliary in type. Sputum negative, no fever, tuberculin reaction negative.

culosis The interpretation must be sought in the peculiar pathologic phenomena The disease is bilateral, equally distributed in the two lungs and affects all involved portions of the lungs simultaneously The pathologic changes, therefore, such as emphysema and fibrosis, usually occur equally and concurrently in all portions of the lungs The parenchymal distribution of the disease is such that it involves areas throughout the lungs only a few millimeters or less in diameter, and the intervening pulmonary tissue is not involved directly by the tuberculous process but continues to function Along with the fibrosis, emphysema develops around each focus so that the lung as an organ is not decreased in size, though markedly decreased functionally, and therefore there is no displacement of the heart, the mediastinum or the trachea and there are no secondary changes in the shape and the appearance of the thorax

When the hematogenous disseminations lead to progressive bronchogenic spread, the pathologic changes, physical signs and symptoms are those of phthisis, and all evidence of hematogenic origin may disappear

focal reaction around the fine nodules The hilar lymph nodes may either still be large or show heavy calcium deposition Periodic roentgenograms of retrogressive lesions show a gradual caudo-apical fading out of the infiltrations, and the nodules in the upper portions of the lungs persist the longest In some cases all roentgenographic evidence of disease may disappear within a few months to a year In other cases the fine hematogenic nodules may become fibrosed or even calcified and persist throughout life Dense invasions of the upper halves of the lungs may lead to heavy fibrosis, appearing as dense homogeneous shadows symmetrically distributed, the lower halves show increased transillumination due to emphysema

DIAGNOSIS

Diagnosis is based on (1) a careful history, especially one of close contact with open tuberculosis during childhood, repeated attacks of pleurisy, (2) age of the patient (childhood or early adult life), (3) protracted mild onset, (4) symmetrical distribution of physical

Clinical Course in Eight Cases of Hematogenous Pulmonary Tuberculosis

Case Name	Age	Race Sex	Onset	Signs and Symptoms on Admission							Months in Hospital	Ray Changes	Signs and Symptoms on Discharge							Condition on Discharge
				Loss of Weight	Fever	Dyspnea	Rales	Vital Capacity Cc	Tuberculin Test †	Sputum †			Weight Gain	Fever	Dyspnea	Rales	Vital Capacity Cc	Tuberculin Test †	Sputum †	
1 M M	31	White ♂	7/30 pleurisy	Yes	No	Yes	Yes	2 800 59%	+	—	3	Fibrosis	+13	No	No	Yes	2 400 48%	+	—	Apparently arrested
2 F J	38	White ♂	1926 pleurisy	No	No	No	Yes	2 500 61%	+	—	3	No change	+16	No	No	Yes	2 600 62%	+	—	Arrested
3 A W	33	White ♂	1930 pleurisy	Yes	No	Yes	Yes	1 300 31%	+	+	15	Fibrosis	+20	No	Yes	Yes	1 400 31%	—	—	Quiescent
4 J B	16	White ♀	7/30	No	No	No	No	2 400 75%	+	—	4	Clearing by resorption	+14	No	No	No	+	—	Signed release	
5 W W	31	White ♂	9/35 pleurisy	Yes	No	Yes	Yes	2 000 48%	+	+	4	Clearing by resorption	+76	No	No	No	3 100 64%	+	—	Apparently arrested
6 P D	20	Negro ♀	1/34 pleurisy	Yes	No	Yes	Yes	1 600 53%	—	—	7	Clearing and fibrosis	+15	No	No	No	2 300 75%	+	—	Arrested
7 P A	22	Negro ♀	4/34 pleurisy	Yes	Yes	Yes	Yes	1 700 56%	—	—	12	Clearing and fibrosis	+21	No	No	No	2 200 73%	+	—	Arrested
8 C I	17	Negro ♂	2/34 pleurisy	Yes	No	Yes	Yes	1 100 30%	—	—	20	Clearing and fibrosis	+37	No	No	No	3 000 70%	+	—	Arrested

* Case histories reported in this article

† + positive — negative

When the hematogenous invasion is very dense in the upper halves of the lungs, the subsequent changes frequently lead to heavy fibrosis in those regions and to emphysema in the lower, less involved, halves On physical examination in such cases there are dullness, bronchovesicular breath sounds and sometimes squeaky grating rales in the upper halves, while signs of emphysema are found in the lower halves The chest in these cases shows definite evidence of underlying pathologic changes the upper halves may be shrunken the interspaces are narrowed and the superficial veins of the thorax are dilated and stand out, but the changes are bilateral and symmetrical Expectoration, when present, is often negative for tubercle bacilli and is due largely to bronchiectatic changes in the upper lobes secondary to the tuberculous process Hemoptysis in the presence of a negative sputum is not infrequent in these cases

ROENTGENOGRAPHY

Early hematogenous disseminations show an evenly distributed seeding of nodules varying in size from one to several millimeters, with the greatest density in the upper halves In the earliest stages the roentgenogram may show a mottled appearance owing to peri-

signs, (5) presence of cough and absent or scanty sputum in the presence of widespread rales, (6) roentgenographic appearance of the lungs, showing a milary nodular dissemination without clinical evidence of generalized milary tuberculosis

A diagnosis of hematogenous tuberculosis must always be confirmed by a roentgenogram, since the physical signs alone are not sufficient criteria for diagnosis or treatment

PROGNOSIS

The prognosis is usually favorable, except in the fulminating type, which is fatal in most cases

DIFFERENTIAL DIAGNOSIS

The disease that is most frequently confused with hematogenous tuberculosis is generalized milary tuberculosis Careful clinical and laboratory study will usually obviate any difficulty that other diseases simulating hematogenous tuberculosis may offer Occasionally a case is encountered that permits no definite antemortem diagnosis with present methods of investigation

1 *Miliary Generalized Tuberculosis*—The symptoms and signs of acute milary tuberculosis are usually

clear cut and present no difficulty. The more chronic forms of miliary tuberculosis are slowly progressive with increasing debility and loss in weight, slight fever persists, sooner or later there will be evidence of involvement of other systems than the pulmonary. In some cases a period of observation may be necessary to decide whether the process is generalized miliary tuberculosis or a localized hematogenous pulmonary dissemination.

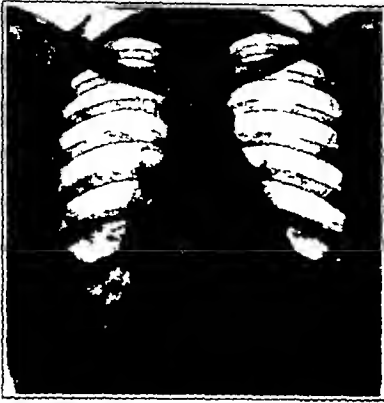


Fig. 4 (case 6)—Appearance twenty-two months later. Complete clearing of all nodular infiltration. Residual light diffuse fibrosis. Tuberculin reaction positive.

2 Pulmonary Congestion—(a) When due to cardiac decompensation, the râles are loud, wet and often gurgling, and they decrease in intensity and number from below upward (the reverse of hematogenous tuberculosis). Signs of heart disease may be present. The appearance of the

roentgenogram showing cardiac enlargement and heavy clouding of the lower lung fields is indicative of pulmonary congestion. (b) Congestive heart disease or heart disease that causes long standing passive congestion may offer difficulty, since heart failure cells gather into small clumps in the alveoli, which throw a nodular shadow on the roentgenogram not unlike the nodules seen in hematogenous tuberculosis. The accompanying fibrosis adds to the confusion of the picture. The enlargement of the heart, cyanosis in the absence of marked dyspnea, the presence of murmurs and the absence of all evidence of inflammatory pleuritic involvement would be against a diagnosis of tuberculosis.

3 Miliary Carcinomatosis—This usually occurs in older persons, the dyspnea is progressive, evidence of carcinoma may be found elsewhere and the appearance of the roentgenogram establishes the diagnosis.

4 Fungous Infections—Abundance of fungi in the sputum that are pathogenic on animal inoculation, and more profuse expectoration that is negative for the bacillus of tuberculosis establish the diagnosis. The roentgenographic appearance is that of ill defined patchy infiltrations much larger in size than is found in hematogenous tuberculosis.

5 Hodgkin's Disease of Miliary Distribution—The nodules in this disease are more discrete and there is no tendency to confluence and no evidence of cavitation. There is progressive enlargement of the lymph glands in the mediastinum.

6 Silicosis—There is a history of exposure to dusts of free silica or silicates. The dyspnea is slowly progressive. Roentgenographically the nodular infiltrations are more limited to the midportions of the lungs and tend to become confluent and densely fibrotic. The upper portions of the lungs are much less involved.

TREATMENT

When active hematogenous tuberculosis is suspected the patient should be placed on complete bed rest, preferably in a tuberculosis hospital or sanatorium. When the diagnosis of tuberculosis is definitely estab-

lished the patient should be treated as having active pulmonary tuberculosis until monthly roentgenograms demonstrate whether the process shows a tendency to retrogression or progression or is stationary. When the condition is stationary and inactive for two or three months, as determined by roentgenogram, physical examination and the clinical course, the disease is probably arrested and the patient may be discharged. When there is evidence of retrogression, the patient should be kept at rest in bed until either the process clears and the roentgenogram shows disappearance of the nodular infiltrations or it becomes stationary, i. e., when periodic roentgenograms fail to show change. The patient is then gradually permitted to return to a normal life. When there is progression of disease with cavity formation, the patient should be on absolute bed rest for at least three months. If at this time the periodic roentgenograms demonstrate that the cavity did not disappear or at least showed no tendency to decrease in size, or if there is evidence of progression at any time, collapse therapy should be employed and the same treatment employed as for any other case of pulmonary tuberculous disease similar in extent and of other than hematogenous origin.

After the disease has become arrested the patient should have a periodic physical examination including analysis of the sputum and roentgen examination, since hematogenous pulmonary tuberculosis has a tendency to recur.

The accompanying table presents a group of cases of hematogenous pulmonary tuberculosis that have come under our observation at the Grasslands Hospital in the last two years. All these cases were referred to the institution with a diagnosis of either "acute miliary tuberculosis" or "miliary tuberculosis" made by the family physician or the public health clinics. Our diagnosis was "hematogenous pulmonary tuberculosis," and though a similar diagnosis was made by the staff at the hospital in a much greater number of cases, only those cases showing roentgenographic evidence of a miliary type of dissemination similar to generalized miliary tuberculosis were included in this table.

Though the number of patients in the table is small, a few interesting points can be noted: 1 Seven of the eight patients had pleurisy at the time of onset of the disease. 2 The vital capacity is an important indicator of the pathologic changes taking place in the lungs. Old and inactive lesions show little change in the vital capacity while under observation, lesions that undergo clearing and but partial fibrosis show a decided increase in the vital capacity. 3 Râles persist in old inactive lesions that have undergone fibrosis.

The following are more detailed reports of cases 5, 6 and 8 listed in the table. They represent the evolution



Fig. 5 (case 8)—Appearance on admission. Widespread very fine dissemination in character with tracheobronchial glandular enlargement. Sputum negative. Tuberculin reaction negative. No fever.

that some of the hematogenous pulmonary disseminations undergo while under observation

CASE 5—W W, a white man, aged 31, admitted May 25, 1936, complained of loss in weight and fatigability. The condition was diagnosed before admission as "miliary tuberculosis." While a child he was in contact with his brother, who died of pulmonary tuberculosis.

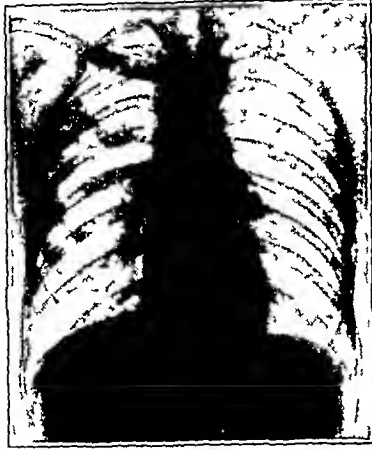


Fig 6 (case 8)—Appearance ten months later. Marked clearing of nodules. Cavity appeared on right in second interspace anteriorly, thin wall, no pericavernous reaction. Sputum positive, tuberculin reaction positive, no fever.

hyperresonant, there were normal breath sounds, with very fine rales extending from the apex to the base. The diagnosis was hematogenous tuberculosis.

Laboratory examination revealed red blood cells, 5,400,000, hemoglobin 85 per cent, white blood cells, 12,400, polymorphonuclear leukocytes, 55 per cent, lymphocytes, 42 per cent, mononuclears, 3 per cent. The urine was normal, the vital capacity was 2,000 cc (48 per cent), the tuberculin reaction positive to 1 mg of old tuberculin, examination of the sputum was negative. The heart was normal.

The temperature remained normal throughout the patient's stay in the hospital, with the pulse from 80 to 90 and the respiration rate from 18 to 20. The patient was on strict bed rest for three months, ambulant for one month and discharged with apparently arrested tuberculosis. During the first two months of his hospital stay he lost in weight from 142 to 132 pounds (64 to 60 Kg) after which he began to gain rapidly and weighed on discharge 168 pounds (76 Kg). Monthly roentgenograms showed gradual clearing of the nodular deposits and marked decrease in size of the tracheobronchial glands. The vital capacity rose to 3,100 cc (64 per cent). The rales disappeared completely.

This patient apparently had active hematogenous pulmonary tuberculosis with marked involvement of the tracheobronchial nodes. There was no evidence of involvement of any other system or organ that could be determined by clinical or other investigation. The process retrogressed by gradual resorption of the miliary nodules in the pulmonary parenchyma and partial fibrosis.

CASE 6—P D, a Negroess, aged 25, admitted May 23, 1934, complained of cough, loss in weight and slight expectoration. There was no known history of contact with tuberculosis. The onset was noted in January 1934 with dry cough and pleurisy one month later. She began to expectorate 1 ounce (30 cc) of thick sputum. She lost 11 pounds (5 Kg). She was examined at the board of health clinic, diagnosed as having miliary tuberculosis and admitted. Physical examination was negative throughout except for fine rales extending from the apex to the base of both lungs.

Laboratory examination revealed red blood cells, 5,600,000 hemoglobin, 82 per cent, white blood cells, 7,200, polymorphonuclear leukocytes, 50 per cent, lymphocytes, 46 per cent, mononuclears, 4 per cent. The vital capacity was 1,600 cc (53 per cent), examination of the sputum was negative for tubercle bacilli by the concentration method and guinea-pig inoculation and negative for fungi, the urine was normal. The tuberculin reaction was negative with serial dilutions up to 1 mg of old tuberculin. There was no fever. The weight was 117 pounds (53 Kg). The diagnosis was hematogenous tuberculosis and pleurisy.

The temperature remained normal throughout the patient's stay in the hospital and expectoration gradually disappeared. She was discharged in December and has been followed in the clinic since. The weight on discharge was 133 pounds (60 Kg). Physical examination on discharge was negative. The vital capacity rose to 2,300 cc (75 per cent). The tuberculin reaction was strongly positive to 1 mg of old tuberculin, examination of the sputum was never positive. Periodic roentgenograms showed gradual clearing of the fine nodular deposits (figs 3 and 4).

A diagnosis of hematogenous pulmonary tuberculosis was made in this case by exclusion since clinical and laboratory studies failed to show evidence of disease that might simulate hematogenous tuberculosis. The roentgenograms on admission showed enlarged tracheobronchial nodes in addition to the dissemination, and both cleared on bed rest. The tuberculin test became positive, having been repeatedly negative on admission.

CASE 8—C J, a Negro youth, aged 17, admitted Sept 29, 1934, complained of loss of weight, pain in the chest, shortness of breath and a slight cough. The onset was noted in February 1934 with coughing and fever. He began to lose weight and noticed dyspnea. A few months later slight expectoration appeared. He was referred to the hospital with a diagnosis of "miliary tuberculosis." Physical examination on admission showed good expansion, normal resonance, bronchovesicular breath sounds and many fine rales over both lungs. The heart was normal. There was pain in the chest on deep inspiration and slight generalized adenopathy of all superficial lymph nodes.

Laboratory examination revealed red blood cells, 4,860,000 hemoglobin, 88 per cent, white blood cells, 6,000, polymorphonuclear leukocytes, 52 per cent, lymphocytes, 21 per cent, mononuclears, 27 per cent. The vital capacity was 1,100 cc (30 per cent). Examination of the sputum was negative on concentration and guinea pig inoculation. The urine was normal, the tuberculin reaction was repeatedly negative to 1 mg of old tuberculin.

Roentgenographic examination showed dense fine nodular dissemination through both lungs and marked enlargement of the tracheobronchial nodes (fig 5).

The patient failed to improve though he was on complete bed rest. His weight dropped from 119 pounds (54 Kg) on admission to 106 pounds (48 Kg) six months later. The epitrochlear lymph gland was excised and histologic study showed tuberculous infiltration with typical tubercles. Periodic roentgenograms showed gradual clearing of the nodules in the lungs. In July 1935 a cavity 2 cm in diameter appeared in the second interspace anteriorly (fig 6). Expectoration at this time was 2 drachms (7.8 cc) and positive for tubercle bacilli on direct

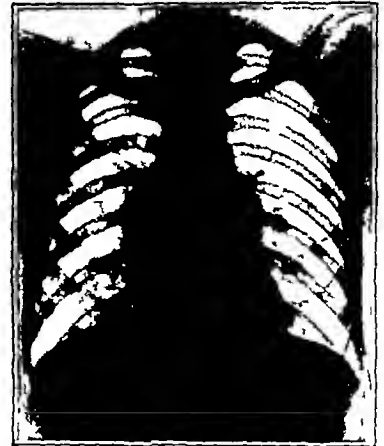


Fig 7 (case 8)—Appearance two months after condition shown in figure 6. The cavity is closed, sputum negative, no fever (fig 5).

smear Following the appearance of the cavity he began to improve and gain weight. Subsequent roentgenograms showed that the cavity closed in November and the sputum became negative. The nodular infiltrations cleared completely by roentgen examination. The patient was discharged in May 1936, at which time physical examination was negative. He gained in weight from 106 to 156 pounds (48 to 71 Kg). The vital capacity rose to 3,000 cc (70 per cent). The tuberculin reaction became positive to 0.1 mg. of old tuberculin.

This patient was at no time acutely ill except for an occasional rise in temperature to 100 F., lasting a day or two. The cavity appeared in spite of progressive clearing of the punctate infiltrations. It had a thin wall and no pericavernous reaction (punched out cavity of Redeker). It closed on bed rest (figs. 5, 6 and 7).

SUMMARY AND CONCLUSIONS

Hematogenous pulmonary tuberculosis is a definite clinical entity apart from miliary generalized tuberculosis. The prognosis in hematogenous pulmonary tuberculosis is favorable in most cases in contradistinction to generalized miliary tuberculosis, which is usually fatal.

STUDIES ON THE PATHOLOGY OF THE RENAL PAPILLA

RELATIONSHIP TO RENAL CALCULUS

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In three previous publications¹ certain deductions were drawn relative to the origin of primary renal calculi. These deductions seem to have been thoroughly supported and proved by the research work performed and therein reported. As subsequent studies have further substantiated these facts, it is pertinent to restate them at this time.

1 It was shown that all clinical data and all reasoning from the point of view of pathology require that a primary renal calculus must be stationary and attached while beginning and acquiring growth.

2 Small renal calculi, when examined under a magnifying lens, almost always show such a stoma, or facet, of mural attachment.

3 X-ray studies in proper cases repeatedly show that such primary renal calculi have their origin in the minor calices.

4 It was postulated and subsequently proved that an initiating lesion would be found.

5 It was postulated and subsequently proved that the initiating lesion would be found on the renal papilla.

6 In a series of postmortem investigations there was observed a new pathologic lesion of the renal papilla, consisting of a deposit of calcium in the basement membrane of the collecting tubules and in the intertubular connective tissue. Such deposits, or calcium plaques,

while intrapapillary were innocent of further trouble but when they occurred near the surface of the papillary wall they were prone to lose their surface covering of epithelium and, when so denuded, could and did act as the nidus on which the salts in the caliceal urine were deposited, and a stone was formed.

7 Such calcium plaque formation was observed in a relatively high percentage of the kidneys studied at regular autopsy, i. e., in 17 per cent of 429 autopsies in our series ending Feb. 15, 1937.

8 In this series twenty-eight examples of primary renal calculi were observed; the majority visibly supported by an underlying calcium plaque.

9 Calcium plaque material has been chemically analyzed and proved to consist of calcium carbonate, calcium phosphate and perhaps calcium nucleinate.

10 By chemical analysis pure calcium phosphate calculi and pure calcium oxalate calculi were proved thus to grow in man. In three further cases the tiny primary calculus was teased from its bed and shown (a) by photomicroscopy to be intimately attached to its papillary calcium plaque and (b) to be of different chemical composition than the plaque itself.

Such studies opened the way to an effort to reproduce these papillary lesions experimentally in lower animals, and the purpose of this paper is to present the results of our studies along these lines and to bring the post-mortem observations up to date (May 15, 1937), terminating an eighteen month period of investigation and a total of 609 autopsies.

As the lesions may be found singly and involving only one papilla in a pair of kidneys, or may appear on several papillae in one kidney, the opposite kidney being normal, or may be present in both kidneys, and as no predilection as to which papilla or kidney is first involved has been observed, it has been the custom to report as positive any pair of kidneys in which the lesion is present, without further detail as to place, multiplicity or bilaterality. To date (May 15, 1937) the kidneys from 609 autopsies have been examined. The calcium plaque lesion was observed in 140 of them, so that the incidence of occurrence was 22.9 per cent.

In the same series of 609 autopsies, forty-nine papillae, with stone growing thereon and adherent thereto, were observed, as follows: In fifteen autopsies a single stone was observed, in ten, two calculi were present in one kidney (in one autopsy each kidney had two), and in one kidney all six papillae were stone bearing. This makes a total of forty-one examples of primary renal calculus, each of which was firmly adherent to its individual papilla, and in practically every one a supporting calcium plaque could be seen underlying the stone. To this total may be added eight examples so small as to be called "cinders," definite tiny black specks which, under a magnifying lens, could be seen as foreign material in the center of a calcium plaque and which, on microscopic study, proved to be crystalline. In two further specimens multiple small calculi were observed in a minor calyx, none over 2 mm. in diameter, but non-adherent to the papilla, and in one of the two specimens this condition was bilateral. Omitting the last two cases but including the tiny "cinder" specimens we report forty-nine examples of stone formation each of which had its origin on a renal papilla. On the basis of the occurrence alone of stone in this group of specimens the eight cases of "cinders" being omitted we observed forty-one examples of true primary renal calculi in twenty-five autopsies which makes the incidence of the simple occurrence of stone, or stones 41 per cent.

Read before the Section on Urology at the Eighty-Eighth Annual Session of the American Medical Association, Atlantic City, N. J., June 9, 1937.

The autopsy material was received from the Departments of Pathology of the University of Pennsylvania School of Medicine, the Abington Memorial Hospital and the Philadelphia General Hospital. The experimental work on animals was performed in the Department of Surgical Research and in the Wistar Institute of the University of Pennsylvania and in the laboratories of the Abington Memorial Hospital.

1. Randall Alexander, "The Initiating Lesions of Renal Calculi," *Surg., Gynec. & Obst.* 64: 201 (Feb.) 1937; Randall Alexander and Melvin P. D. The Morphogenesis of Renal Calculi, *J. Urol.* 38: 253 (June) 1937; Randall Alexander, "Observation on the Origin and Growth of Renal Calculi," *Ann. Surg.* 105: 1009 (June) 1937.

Our efforts to reproduce the papillary lesion have been approached through three separate problems, each of which was suggested by either clinical observation or previous experimental work. In each problem we have met with indifferent success, but it is to be remarked that as we were interested especially in reproducing what we consider a precalculus, or initiating, lesion, we have sacrificed a great many of our animals early in order to try to observe this lesion in its incipience.

THE RELATIONSHIP TO VITAMIN A DEFICIENCY

Rats of the Wistar Institute breed were used, and it is perhaps of particular significance that in the past they have shown themselves particularly resistant to the effects commonly caused by vitamin A deficiency diets. This is attributed to the high vitamin diet which they have been fed and to the storage of vitamin in their systems. They should be ideal for this experiment, as their vitamin loss is gradual and the experiment follows a more typical clinical and chronic course. This study has been devoid of positive results, though it is still being pursued, and of the eighty-two rats undergoing experimentation only forty-five have been killed to date. We are killing these animals at intervals and are searching for evidences of calcium deposition and perhaps other evidences significant of initiating lesions of the papilla. The basic diet has been casein 15 parts, salts (Osborn and Mendel²) 4 parts, irradiated yeast 10 parts, dextrin 53 parts and lard 18 parts. The following brief group protocols may be given.

Group 1 Six rats, 25 days old, were put on the diet Nov 21, 1936. One was killed on Jan 4, 1937, two on February 15, one on April 1 and two on April 16. Macroscopic and microscopic examination of the kidneys of each gave negative results. All were losing weight when killed.



Fig. 1—Cloudy swelling in the convoluted tubules of a rabbit's kidney after the administration of eleven daily injections of stable streptococcus hemolysin leukocidin.

Group 2 Six rats 92 days old, were put on the same diet on the same date. One was killed on January 19, one died on April 9 and one died on May 18. The examination of each gave negative results. The three remaining alive are gradually losing weight.

Group 3 Six rats 91 days old, were put on the same diet on November 21. One was killed on March 12. examination

gave negative results. The remainder are alive but losing weight and in poor condition.

Group 4 Six rats, 26 and 28 days old, were put on the diet on November 27. One died on May 6 and another on May 13. The kidneys did not show the expected lesions. Four of the animals are alive in very poor condition.

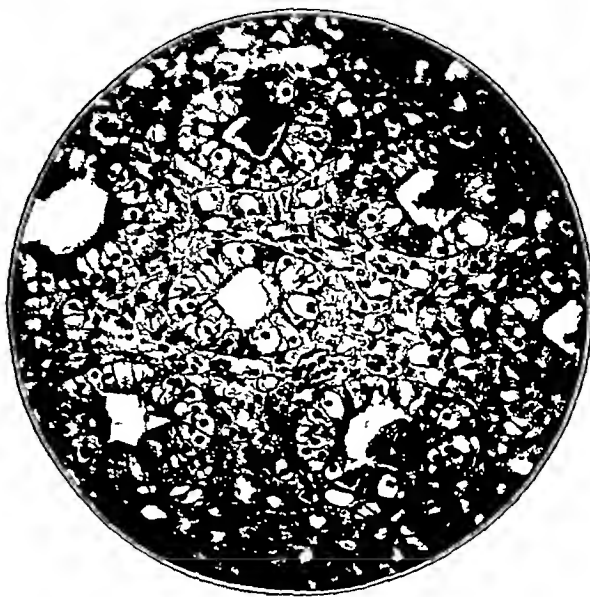


Fig. 2—The collecting tubules of a rabbit's kidney showing epithelial damage and tubular exudate after eleven daily injections of stable streptococcus hemolysin leukocidin.

Twelve of twenty-four rats have been examined post mortem (four had died). The expected lesions were not observed, though the animals still alive show characteristic signs of vitamin deficiency—marked xerophthalmia, loss of weight, weakness and generalized cachexia.

Group 5 Six rats 93 days old, on November 21 were put on vitamins A and D deficiency diets by the substitution of non-irradiated yeast 7 parts for the irradiated yeast 10 parts. One was killed on January 27 and another on February 5. Neither had lesions of the renal pelvis. The remaining four are in poor condition.

Group 6 Six rats, from 89 to 93 days old, were put on a similar diet November 21. One was killed on January 4. examination gave negative results. The remaining five are alive but losing ground.

Group 7 Six rats, 25 days old, were started on the same diet November 27. One was killed on January 19, another on February 15, and four on April 16, the kidneys were normal.

Group 8 Six rats 25 days old, were started on the same diet November 27. Two were killed on February 2, one on March 5 and three on April 16. the kidneys were normal.

Of twenty-four rats nine are still alive and fifteen were killed. All were on vitamins A and D deficiency diets. Some were given a few drops of cod liver oil (orally) on April 9 because of their poor condition and to prolong the experiment. No lesions of renal papillae were observed.

Group 9 Six rats, 27 days old were started on the vitamin A deficiency diet January 5. One died on April 6. examination gave negative results. The remainder are losing ground.

Group 10 Six rats 27 days old were started on the same diet January 5. One died May 12 and the kidneys were normal. The remaining five are in poor condition and have typical symptoms of vitamin A deficiency.

Group 11 Five rats, 27 days old, were started on the same vitamin A deficiency diet January 5. One died May 2 and the remaining four were killed. In one a bladder calculus was observed and the kidneys failed to show any calcium deposition.

² Osborn, T. B. and Mendel, I. B. Nutritive Value of the Wheat Kernel and Its Milling Products. J. Biol. Chem. 37: 557 (April) 1919.

These seventeen rats were similar to the first four groups but were kept and fed in separate cages. Three died, and four were killed. Most of them received a few drops of cod liver oil on April 7 because of their poor condition. Though in one a tiny bladder calculus was observed, macroscopic and microscopic examination of the kidneys did not show calcium deposition or pathologic change in the papillae.

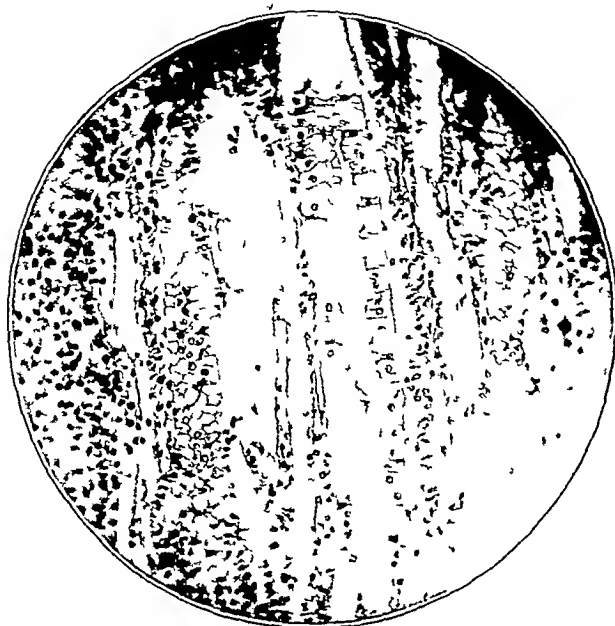


Fig. 3—High grade epithelial damage in the terminal collecting tubules in the papilla of an experimental rabbit after eleven daily intravenous injections of stable streptococcus hemolysin leukocidin.

Group 12. Five rats, 28 days old, were put on Higgins' vitamin A deficiency diet on January 5. One was killed on February 15, one on March 5, one on April 3 and two on April 20. They were given yeast on February 13, 14 and 23 and on March 15 to keep them alive. The kidneys of all were normal.

Group 13. Twelve rats, 26 and 30 days old, were started on Higgins' diet January 22. Six have been killed and their kidneys observed to be normal and six are still alive and in fair condition.

These two groups comprised seventeen rats, eleven have been killed and their kidneys proved to be normal, and the others are to be tested further.

Four other groups have been under observation, and we mention them only as studies. In each animal the results were negative. Six old rats and six young rats were on a high salt diet (Hou¹), seventeen rats in three groups were on Higgins' diet and a final group, of ten rats, received parathyroid extract.

It is hardly necessary to do more than mention that by this work we have been striving to substantiate, in studies with animals, the pathologic changes that we have observed in man and that we know are closely related to the occurrence of primary renal calculus. That all the animals have not yet been killed and studied is to be noted for we have wanted to make a chronic and not an acute experimental condition and hope, by killing the animals periodically to observe early evidences that can be related to the origin of stone under the dietary conditions imposed.

THE RÔLE OF INFECTION

As, microscopically, the calcium plaque lesion was consistently devoid of any evidence of focal infection in the papilla, either in the appearance of organisms in the tissue or in tissue reactions characteristic of the presence of infection, it became evident that the introduction of bacteria per se was not essential to the problem. The effect of bacterial toxin is quite another matter and as the lesion gave every evidence of being a calcium deposition in response to some form of damage to the collecting tubules there was the possibility that the concentration of some such toxic material at this point could be the primary cause. In the laboratories of the Abington Memorial Hospital a staphylococcus toxin was elaborated, and we injected it into rabbits in a small series of experiments. This toxin proved to be too potent to work with accurately, and the animals died promptly after the injection of 0.2 cc, so a toxoid was prepared by the addition of 0.2 per cent of formaldehyde and incubated at 39 C from twenty-four to forty-eight hours. The experiments consisted of the intravenous injection of 5 cc of this toxoid, to be followed by simultaneous collection of blood and urine at frequent intervals over the following three or four hours for the titration of toxoid content. It was to be assumed that the concentration of the toxoid in the glomerular filtrate would be the equal of that in the plasma and that somewhere along the renal tubules concentration of the toxic material would occur, and we wished to find out if this could be observed.

In an experiment with a rabbit weighing 2,700 Gm in which 5 cc of staphylococcus toxoid of L. B. 001 was injected intravenously, subsequent titrations proved that at the highest reading this toxoid was present in the urine in a concentration five times greater than in

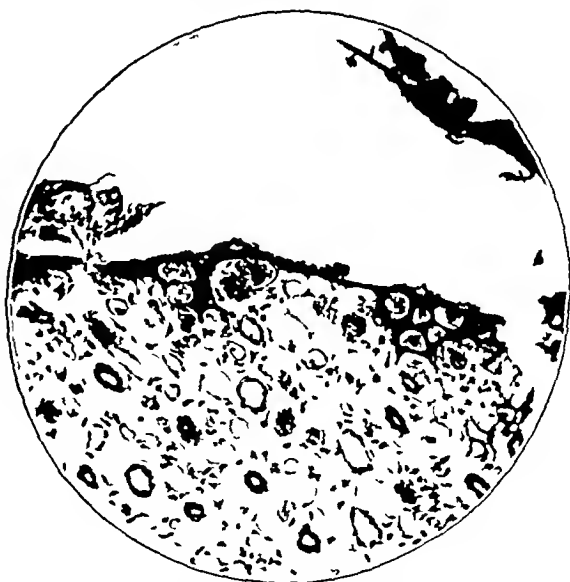


Fig. 4—Typical calcium plaque formation on the side of a papilla, dog 97 after the administration of parathyroid extract for six months. This is the first time that such a lesion has been observed in a lower animal.

the blood stream at its maximum concentration at five and ten minutes after injection. This rabbit secreted 0.13 cc of urine per minute.

In a second similar experiment a rabbit weighing 1,940 Gm was given an intravenous injection of 5 cc of the same toxoid of L. B. 002. This toxoid was recovered from the urine in a concentration sixty times

¹ Higgins, C. C. Experimental Production of Urinary Calculi. *Urol.* 29: 157 (Feb.) 1916.
² Hou, H. C. Influence of Diet on the Formation of Urinary Calculi. *Chinese M. J.* 30: 22 (June) 1916.

greater than that in the blood stream at its point of maximum concentration. The rabbit secreted 0.02 cc of urine per minute.

These examples, together with others, from our series of ten similar experiments, seem definitely to prove that the kidney can and does concentrate this toxic material from two and a half to sixty times the blood stream content. The tabulation and complete protocols of this experimental work have been reported by Dr Ezra Casman of the Abington Memorial Hospital before the Eastern Chapter of American Bacteriologists and are to be published in the *Journal of Bacteriology*.

Through the courtesy of Dr Stuart Mudd, professor of bacteriology, University of Pennsylvania, we were supplied with some of his stable streptococcus hemolysin leukocidin, we desired to use it because it is a haptin and does not give rise to the formation of antibodies when injected into animals. It was injected into a small series of rabbits, and the following protocols are characteristic.

Rabbit 8, weighing 1308 Gm, was given 1 cc of a 1:500 dilution on each of three consecutive days. Death followed the third injection. Grossly the kidneys showed no noteworthy lesions. Microscopically there was cloudy swelling of the epithelium of the convoluted tubules and albuminous exudate into Bowman's capsule. The collecting tubules showed marked degenerative changes. The lining epithelial cells were necrotic and in many places desquamated. In other places the basement connective tissue was damaged. At the very tip of the papilla was an area of necrosis.

Rabbit 6, weighing 1370 Gm, was given eleven daily injections of 1 cc of the same preparation in a 1:2500 dilution. The only lesions observed were microscopic and showed necrosis of a few cells in a number of the collecting tubules with no lesions in the glomeruli or in the convoluted tubules.

All the control rabbits were entirely normal.

Such kidneys present conclusive evidence that damage has been suffered by the epithelium of the renal tubules and though cloudy swelling is present in the convoluted tubules when high concentrations have been given, the greatest damage of all is in the terminal collecting tubules in parts of which even epithelial exfoliation can be observed (figs 1, 2 and 3).

These experiments seem to prove that the kidney does concentrate bacterial toxins while excreting them and that the elimination of a streptococcus toxin through the kidney can cause definite localized damage which is most marked in the walls of the collecting tubules. Naturally the concentration of any toxin in the urine varies inversely with the amount of urine excreted, and this fact carries attractive therapeutic implications. From it we deduce that either (1) the complete reparative process that follows an acute insult of such nature or (2) the kidney's reaction to lower grade but oft repeated, toxic insults could be directly associated with tubular and intertubular calcium deposition such as we have observed in man and described as calcium plaque formation. In either case it could be recognized as a natural sequel to insult and is comparable to calcium deposition as seen elsewhere in the body under similar circumstances. This experiment is to be pursued further.

THE RELATIONSHIP TO PARATHYROID HYPERTENSION

Fifteen healthy adult dogs were given parathyroid extract.⁵ Changes in the blood calcium were estimated at weekly intervals, and, when possible, estimations of

the urine calcium were likewise made. Practically every dog had one kidney removed after from two to five months' administration and was not killed for two or more months longer. Some of these dogs were given enormous doses of the parathyroid extract daily (as high as 500 units), and viosterol was added to the diet of some, as suggested by Johnson.⁶ Elevation of the blood calcium was difficult to obtain and still more difficult to sustain, though figures of from 12 to 14 mg per hundred cubic centimeters and in a few instances of from 17 to 19 mg were recorded. The kidneys removed surgically in the middle of the experiments were all completely normal, both macroscopically and microscopically. Of the remaining kidneys, on which the dogs lived while the daily administration of parathyroid extract was continued, one was completely normal, though a vesical calculus was present, and seven showed microscopically some small scattered depositions of calcium, generally occurring as intratubular deposits and rather generally scattered throughout papilla, medulla and cortex. We have one brilliant exception to report, for in the right kidney (the remaining one) of dog 97 was observed, on microscopic study only, a true and characteristic calcium plaque, similar and identical in every respect to that which we have observed in man in our postmortem studies. There was no evidence of stone growing thereon, as the plaque was still a sub-surface deposit on the side wall of the papilla. The following short protocols are representative of the entire group.

Dog 97 weighed 13 Kg. The administration of parathyroid extract was started November 17, the blood calcium content was 11.71 mg per hundred cubic centimeters. On January 6, 1440 units had been given, the blood calcium was 11.69 mg. On January 28 a left nephrectomy was performed, the kidney was normal. On March 8, 1,630 units had been given and the blood calcium was 10.50 mg. From March 12 to 22 was a rest period, and on March 25 10 drops of viosterol was added to the daily diet. On April 16, when 4,890 units had been given, the daily dose was increased to 500 units, and the administration of viosterol was continued. On April 28 the blood calcium was 15.9 mg, on April 29 17.3 mg and on April 30 18.4 mg. On May 4 the dog was killed. He had received 6,240 units of parathyroid extract and 1,475 drops of viosterol and his blood calcium was then 11.2 mg. The kidney, macroscopically, showed a tiny yellow speck on the papilla and, microscopically, a typical calcium plaque, similar in every respect to the ones we have observed in man (fig 4).

Dog 103 weighed 11 Kg. Administration of parathyroid extract was started on November 17, the blood calcium content was 11.53 mg per hundred cubic centimeters. On November 23 the blood calcium was 19.11 mg, and 800 units had been given. From November 24 to December 3 was a rest period. On December 21 the blood calcium was 12.23 mg. On March 11 a left nephrectomy was performed. At this date the dog had had 4,580 units of parathyroid extract and the blood calcium was 11.5 mg. The kidney was normal. After a rest period from March 11 to 23, he was given daily doses of parathyroid extract and viosterol until May 4, when he was killed. The highest blood calcium reading during this period was 14.1 mg on April 30 and he received, in all 8,460 units of parathyroid extract and 1,434 drops of viosterol. The right kidney was normal macroscopically, but microscopically small deposits of calcium could be seen scattered throughout papilla and cortex. They were mostly intratubular but were definitely associated with some epithelial damage.

Dog 131 weighed 16.9 Kg. Administration of parathyroid extract was begun November 30 when the blood calcium content was 11.22 mg per hundred cubic centimeters. On January 6 the blood calcium was 12.57 mg and he had received 615 units

⁵ Johnson J. L. Experimental Chronic Hyperparathyroidism. IV. Effects of Administration of Irradiated Ergosterol. *Am J M Sc* 183 (1932).

⁶ Supplied by Eli Lilly & Co.

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On March 10 viosterol 10 drops per day was added to the diet and he had a rest period from March 3 to 22 from parathyroid extract. On April 8 a left nephrectomy was performed at which time he had received 5,055 units of parathyroid extract and 285 drops of viosterol the blood calcium was 9.45 mg. The left kidney was normal. The dose of parathyroid extract was increased to 200 units daily on April 12 and to 400 daily on April 26. The blood calcium on April 30 reached its highest point, 13.8 mg. The dog was killed on May 4, having received 7,055 units of parathyroid extract and 1,395 drops of viosterol. The bladder contained a thimbleful of fine round yellow calculi the largest measuring 3 by 4 mm. On analysis they proved to be composed of calcium phosphate. The right kidney was macroscopically normal but on microscopic study scattered deposits of calcium were observed throughout the papilla and cortex, as in dog 103.

A similar collection of bladder calculi was observed in dog 125.

This experiment with parathyroid extract which for long seemed the least promising, has been the only one to date in which we have observed a calcium plaque similar to those in man. It remains for us to associate this observation further with actual growth of stone. Even if the latter is accomplished, it cannot then be said that it comprises the only etiologic factor capable of causing calcium deposits in the renal papilla. That the experiment provides a lead quite in keeping with clinical experience and the prevalence of renal calculus in cases of hyperparathyroidism is not to be lost sight of. That it offers the only observation that has been made of the occurrence of papillary calcium plaque formation in lower animals is, of itself, most interesting. Of course, it is quite presumptive to accredit to the administration of the parathyroid extract the entire responsibility for this lesion, as primary renal calculus in the dog is not unusual and this might be but a fortuitous observation. Also, we wish to state that this papilla showed several areas of localized round cell infiltration without any necrosis, that they were remote from the calcium plaque and that there was no calcium deposition near by.

COMMENT

We wish again to point out the quite obvious and self-evident fact that primary renal calculus is but the crystallization of the common urinary salts on a pre-existing papillary lesion, that during the time of such asymptomatic growth a stone is adherent to the papilla, and that we have observed such growth in 41 per cent of the autopsies performed. We have made observations to date on 609 autopsies, and in this material we have again noted the prevalence of a papillary lesion consisting of a deposition of calcium salts and have shown that primary renal calculi can and do grow thereon. Such calcium deposition, or plaque when intrapapillary is innocent enough, but it can lose its epithelial covering and when so denuded, is bathed in calceal urine and acts as the nidus on which crystallization occurs. This fact we have proved in a number of cases previously reported, and we have shown a difference between the chemical composition of such a papillary calcium plaque and that of the true stone.

We have tried to reproduce this papillary lesion experimentally by vitamin-deficient diets, by injection of toxin and by administration of parathyroid extract. The dietary experiment has not as yet produced any papillary lesions but is being pursued. By the injections of toxin we learned two interesting facts: first, that the kidney in excreting the toxin likewise concentrates it to a high degree and second that such concentration appears to occur in the terminal collecting tubules and

causes damage thereto. The administration of parathyroid extract has apparently caused scattered deposits of calcium in the kidneys of seven of fifteen dogs and in one dog a true and typical calcium plaque lesion was observed.

As our work has clarified the subject in certain particulars, a further word would not be amiss. Let it first be noted that, though renal calculus disease in man is often confused by coexisting complications the problem of origin had best be solved through an understanding of the basic principles involved and a knowledge of the pathology of the simple primary renal stone. Such primary stone, occurring in the absence of other recognized pathologic states of the kidney, is essentially the result of a slow chronic process, and the cause, origin and growth probably cover a relatively long period. It seems proper to point out a glaring fallacy that has been evident in the greater part of the experimental work on this problem, for, aside from the necessary use of lower animals, in almost all the experiments in the past, including those in which calculi were produced, an acute condition was created, by drastic dietary alterations, by extreme overfeeding of certain urinary salts or by establishment of acute infectious processes. Such experiments do not parallel the clinical state or the clinical picture in man, and the conclusions therefrom do not aid in an appreciation of the problem as met in man.

SUMMARY AND CONCLUSIONS

Calcium plaque formation of the renal papilla was observed in 140 of 609 autopsies, i. e., in 22.9 per cent.

In the same series of autopsies forty-nine renal papillae were observed with stone adherent thereto, and in practically every instance the stone was growing from a calcium deposition in the papillary wall.

Stone was found in twenty-five of the 609 autopsies or in 4.1 per cent.

Our efforts to reproduce this calcium plaque formation in lower animals by vitamin-deficient diets failed.

A staphylococcus toxoid was concentrated by the rabbit's kidney from two and one half to sixty times its blood plasma content.

The administration of a stable streptococcus hemolysin leukocidin effects highly suggestive results, causing local damage to the epithelium of the collecting tubules.

After the administration of parathyroid extract to dogs for six months we observed in one renal papilla a calcium plaque identical to that which we have seen in man.

We wish to point out again that the occurrence of renal calculus in man is essentially only a symptom of some underlying pathologic condition of a renal papilla and that its entire development is a slow, chronic process. Acute results obtained in experiments on animals are not comparable to the clinical picture.

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LATE RESULTS IN THE CONSERVATIVE MANAGEMENT OF NEPHROLITHIASIS

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AND

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Operation is usually advised and performed if a patient is found to have a renal calculus. For various reasons, however, certain persons who have nephrolithiasis are not treated surgically at the time when this diagnosis is first established. The minute nature of the calculus, the complete absence of symptoms, the presence of serious disease elsewhere in the body, advanced pathologic changes in the urinary tract, and other reasons may apparently render operation unnecessary or undesirable. Some patients who are not operated on progress quite satisfactorily under medical management and no serious symptoms referable to the urinary tract develop. Unfortunately, this is not generally true, as in the majority of cases symptoms of varying severity occur sooner or later and may render subsequent operation imperative or even jeopardize the patient's life.

It therefore seemed worth while to determine, if possible, the factors which influence the clinical course of a patient with nephrolithiasis if early operation is not performed. For this reason a follow-up study was made of 177 patients who had nephrolithiasis but were not operated on at the time when the stones were first discovered. Fifty-seven per cent of these patients returned to the clinic for subsequent urologic investigation, information was obtained by letter from the remainder. Various factors which seemed significant in the progress of these patients were considered, namely, the history of pain in the renal area, the size and location of the calculi, whether the calculi were unilateral or bilateral, the pyelographic appearances, the presence of infection, and renal function.

It should be stated that this series of 177 patients comprises a rather heterogeneous group. In some cases (33½ per cent) operation was advised but was not performed. In other cases (66½ per cent) operation was not advised because it was deemed either unnecessary or undesirable. Some patients had symptomless or "silent" stones, whereas others had experienced severe pain. The entire series, however, is representative of all patients who do not receive early surgical treatment. In a subsequent study further consideration will be given to uniform types of cases.

Most of the patients included in this study were first seen at the Mayo Clinic during the period 1920-1925. The average length of the follow up was therefore slightly more than eleven years. The majority of patients were between 30 and 60 years of age, the average age was 46.4 years. The ratio of men to women was 2:1. There were 131 cases of unilateral and forty-six cases of bilateral renal calculi. Sixteen of the entire series of patients had recurrent stones at the time they were first seen.

A study of all patients revealed that 81.8 per cent of those who had unilateral stones and 97.8 per cent of those with bilateral stones had subsequent symptoms

referable to the urinary tract (table 1). In some instances these symptoms were of sufficient severity to necessitate operation months or years after the calculi were first detected. This occurred more frequently when bilateral stones were present (45.7 per cent) than when stones were present on one side only (35.1 per cent). In the forty-six cases of unilateral stone in which surgical treatment was subsequently required, nephrectomy was necessary in somewhat more than half of the cases, which makes the incidence of nephrectomy twice as high as in a comparable group of cases in which the patients were operated on earlier.¹ In the presence of bilateral stones, surgical treatment must necessarily be conservative and nephrectomy was accordingly performed in only 20 per cent of the twenty-one cases of bilateral stones in which the patients were ultimately operated on, 15.3 per cent of the patients with unilateral stones and 30.4 per cent of those with bilateral stones died within an average of eleven years when "conservative" treatment was employed (patients known to have died of causes unrelated to the genito-urinary tract were excluded).

Certain factors which influence the clinical course of the patient who has nephrolithiasis will now be considered.

HISTORY OF PAIN

Patients who have so-called silent stones have a much better chance of remaining symptom free than those who give a definite history of pain. As will be seen in

TABLE 1—Late Results Following Conservative Treatment of Renal Calculi*

	Cases	No Further Symptoms per Cent	Symptoms Developed Later		Operation Necessary Later per Cent	Mortality per Cent
			per Cent	per Cent		
Unilateral stones	131	18.2	81.8	35.1	15.3	
Bilateral stones	46	2.2	97.8	40.7	30.4	

* Average length of follow up eleven years.

† Deaths from causes known to be unrelated to genito-urinary tract are excluded.

table 2, one third of the patients with "silent" stones had no further symptoms referable to the urinary tract, in contrast to only 33 per cent of those who had experienced pain. The fact that a stone has caused no symptoms for a certain length of time, however, is no assurance that it will continue to remain symptomless, as is evidenced by the fact that symptoms of sufficient magnitude to warrant operation subsequently developed in 24.4 per cent of the cases of "silent" stones.

Although a "silent" stone may be found in an infected kidney which reveals definite pyelographic abnormalities and decreased function, usually there is little or no infection present and the renal function and pyelographic outline are relatively normal if the calculus remains symptomless. Certain cases of large branched stones are notable exceptions to this statement. One should remember however that, in the later stages of renal destruction, pain may be neither so acute nor so frequent. It is difficult to determine why certain stones cause severe pain, pyelographic abnormalities and progressive renal damage and other stones, apparently under almost identical conditions remain symptomless and cause few changes in the kidney. One should

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Read before the Section on Urology at the Eighty-Eighth Annual Session of the American Medical Association, Atlantic City, N. J., June 9, 1937.

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SIGNS OF VITAMIN A DEFICIENCY IN THE EYE CORRELATED WITH URINARY LITHIASIS

A REPORT OF CLINICAL STUDIES AND INVESTIGATIONS ON TWENTY-FIVE PATIENTS

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In this study our aim was to determine, if possible, any relationship that may exist between vitamin A deficiency and upper urinary lithiasis in human beings.

In order to prove or disprove such relationship, we decided to test for vitamin A deficiency a group of individuals who have or have had renal or ureteral calculi. The method employed was the dark adaptation

experimental animals were found to thrive or to sicken, depending on the fat content of their diet, whether butter fat or lard. Dietary deficiency in fats could be overcome by feeding green and yellow vegetables.

This led to the discovery of vitamin A and its influence on nutrition. As mentioned, this substance is furnished for the most part by the butter fats.

Moore³ proved that carotene, a constituent of green and yellow vegetables, is a precursor to vitamin A in the animal body.

Capper and his co-workers⁴ found in chickens and Moore³ in rats that the liver fat becomes very rich in vitamin A after liberal feedings of carotene.

It has been definitely proved that vitamin A or its precursor is essential to growth and to normal nutrition and health at all ages. Lack of vitamin A often results in general debility and loss of resistance to infections. Early and frequent manifestations are

xerophthalmia and keratomalacia. The same nutritional deficiency frequently results in the formation of renal calculi.

Wolbach and Howe⁵ and Church⁶ concluded from experimentation that "the specific effect of the absence of fat soluble vitamin A in albino rats, guinea-pigs and humans is found in epithelial tissues. This effect is the substitution of stratified keratinizing epithelium for normal epithelium in various parts of the respiratory tract, alimentary tract, eyes and para-ocular glands and genito-urinary tract."

Friderica and Holm⁶ and Tansley⁷ found that vitamin A deficiency retards regeneration of visual purple, which may explain the connection between shortage of vitamin A and night blindness.

We are particularly interested in experiments demon-

strating the relationship between deficiency of vitamin A and the production of urinary calculi in animals. Among those who have made outstanding contributions to this phase of the subject are McCarrison,⁸ Osborne and Mendel,² Fujimaki,⁹ van Leersum,¹⁰ Perlmann and

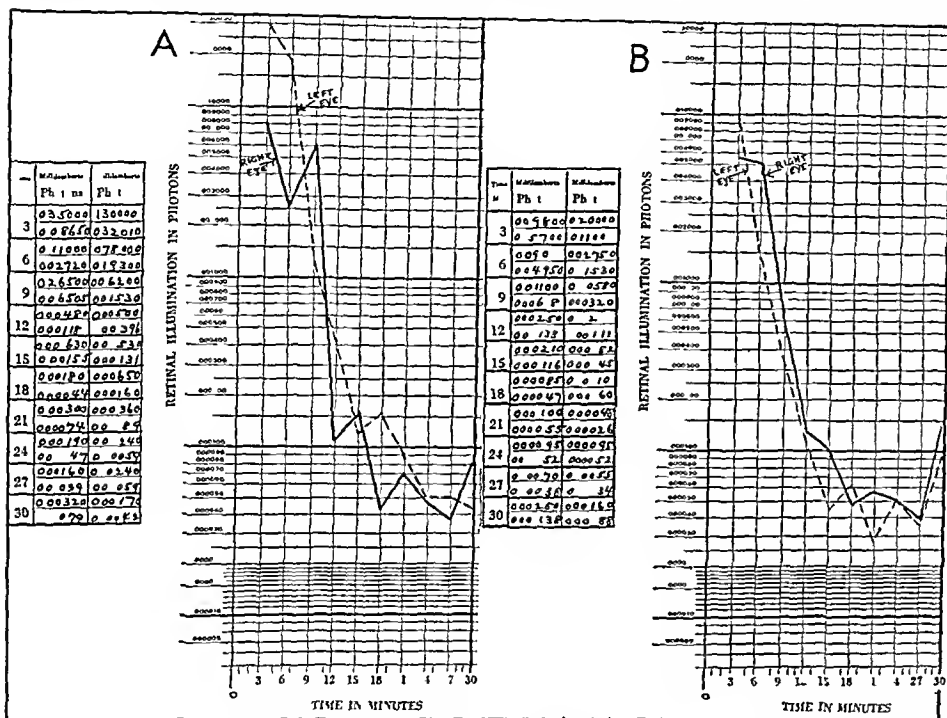


Chart 1 (case 7 group III)—C. S., a man aged 38 with a ureteral calculus on the left (diagnosis of ureteral calculus on the right in April 1934) had vision in both the right and the left eye of 6/6. Graphs of photons: A, June 6, 1936, pathologic before treatment; B, April 10, 1937, pathologic after treatment.

or light sensitivity test. In the absence of demonstrable disorders of the eye, an increase in the light sensitivity (dysadaptation) is an indication of the failure of the regeneration of the visual purple. One of the main causes of this condition is lack of vitamin A.

EXPERIMENTAL DATA

The substance or nutritional factor known as vitamin A was discovered through experiments made independently and almost simultaneously in 1913 by McCollum and Davis¹ and by Osborne and Mendel.² Young

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Read before the Section on Urology at the Eighty-Eighth Annual Session of the American Medical Association, Atlantic City, N. J., June 9, 1937.

1. McCollum, E. V., and Davis, Marguerite. The Necessity of Certain Lipins in the Diet During Growth. *J. Biochem.* 15: 167-175 (1915).

2. Osborne, T. B., Mendel, L. B., and Ferry, E. B. Phosphatide Incidence of Urinary Calculi in Rats Fed on Experimental Ration. *J. A. M. A.* 69: 32 (July 7) 1917. Osborne, T. B., and Mendel, L. B. Influence of Natural Fats on Growth. *J. Biol. Chem.* 16: 423-437 (1917). Osborne, T. B., Mendel, L. B., and Cannon, H. C. Ophthalmia as a Symptom of Dietary Deficiency. *Am. J. Physiol.* 69: 543-547 (Aug.) 1924.

3. Moore, T. The Distribution of Vitamin A and Carotene in the Body of the Rat. *J. Biochem.* 25: 275-286 (1931).

4. Capper, N. S., McKibbin, I. M. W., and Prentice, J. H. Carotene and Vitamin A. The Conversion of Carotene into Vitamin A by Fowl. *Biochem. J.* 25: 265-274 (1931).

5. Wolbach, S. B., and Howe, P. R. Tissue Changes Following Deprivation of Fat Soluble Vitamin A. *J. Exper. Med.* 12: 753-777 (Dec.) 1925.

6. Friderica, L. D., and Holm, E. Experimental Contributions to the Study of the Relation Between Night Blindness and Malnutrition. Influence of Deficiency of Fat Soluble Vitamin A in Diet on Visual Purple in Eyes of Rats. *Am. J. Physiol.* 72: 63-78 (June) 1925.

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8. McCarrison, Robert. Experimental Production of Stone in Puffer. *Brit. M. J.* 1: 717-718 (April 16) 1927.

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Weber¹¹ and Higgins¹² They agree that vitamin A deficiency is often the cause of the production of urinary lithiasis in experimental animals

The effects of this deficiency in the eye are equally well established and cause such symptoms as hemeralopia (night blindness) and xerophthalmia Hemeralopia is due to disturbance in the function of the rods in the retina, concerning chiefly visual purple metabolism

DARK ADAPTATION STUDIES IN UROLITHIASIS

The series reported herewith comprises seventy-five patients, twenty-five of whom had urolithiasis These individuals were subjected to dark adaptation tests by means of a photometer devised by one of us,¹³ which permits of quantitative estimations of dark adaptation and graphic recording of the results

In the following classification, these patients are grouped on the basis of renal or ureteral disorders

Group I Those who have renal or ureteral calculi at the present time and never had any operative procedure for removal of calculi or passed any spontaneously six cases (3, 4, 10, 11, 18, 19)

Group II Those who have renal or ureteral calculi at the present time and have had one or more operations for removal of calculi five cases (1, 9, 12, 13, 24)

Group III Those who have renal or ureteral calculi at the present time and give a history of having passed a calculus spontaneously three cases (6, 14, 15)

Group IV Those who have no renal or ureteral calculi at the present but who have had calculi removed surgically or passed them spontaneously eleven cases (2, 5, 7, 8, 16, 17, 20, 21, 22, 23, 25)

Of the twenty-five patients with urolithiasis, twenty-four were found to have pathologic dark adaptation, varying from mild to severe This group consisted of sixteen white men, eight white women and one Negress, ranging in age from 14 to 62 years Various nationalities were represented and the majority came from the poorer classes

Investigations disclosed dietary deficiency in vitamin A in many instances The remaining fifty patients, constituting a control group, were known to be free from urinary calculi and either were normal or had extra-urinary lesions such as cholecystitis, cholelithiasis or gastric ulcer

None of the patients in either group had eye lesions that might influence the test With few excep-

tions the dark adaptation test in the control group proved negative Exceptions were noted in the following cases myxedema, one, juvenile diabetes, one, jaundice, two

TREATMENT

The twenty-four persons who showed pathologic dark adaptation were then placed on vitamin A therapy The product used was an approved commercial vitamin A concentrate of fish oils The treatment lasted from six to nine months Each patient was given a definite amount of the concentrate ranging from 13,000 units daily (which is held by Eddy¹⁴ and others to constitute the maximum sustaining adult dose) to 52,000 units daily In addition they were placed on acid ash or alkaline ash diets, depending on the urinary pH

The accompanying table shows the amount of vitamin A concentrate administered and the number of

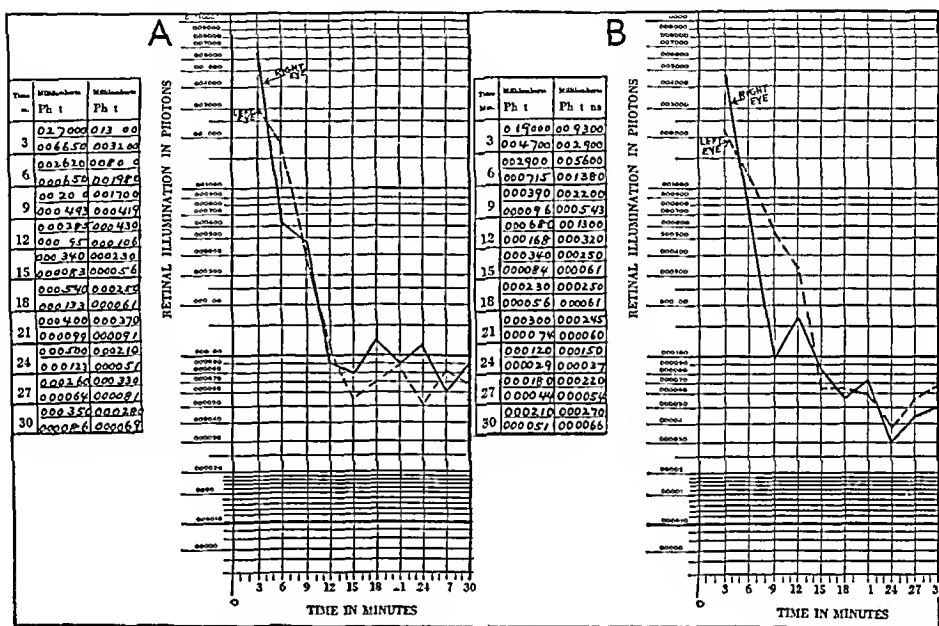


Chart 2 (case 12 group IV)—G I a man aged 46 with a staghorn calculus of the left kidney (uretero lithotomy on the right in 1932) had vision in both the right and the left eye of 20/30—3. Graphs of photons A July 14 1936 pathologic before treatment B March 22 1937 pathologic after treatment

patients who carried out the treatment regularly, those who were treated irregularly, and those who failed to carry out any treatment

Treatment With Vitamin A Concentrate

Group I (5)	Group II (6)	Group III (9)	Group IV (4)
13 000 units daily	26 000 units daily	39 000 units	52 000 units daily
Patients	Patients	Patients	Patients
14 20 22 23	4 5 6 11 16	1 2 7 8 10	3 9 12 18
24	21	15 17 19 25	
Carried out treatment regularly (11)			
Patients 1 2 3 4 5 12 15 21 22 24 25			
Carried out treatment irregularly (9)			
Patients 7 9 10 11 14 16 17 18 19			
Failed to carry out any treatment (4)			
Patients 6 8 20 23			

Fifteen of the group returned for restudies (patients 1, 2, 3, 4, 5, 7, 10, 11, 12, 14, 15, 19, 21, 24, 25), which were begun in March 1937. Of these patients fourteen continued to show a definite pathologic dark adaptation and one proved only slightly pathologic

14 Eddy W H and Dalldorf Gilbert The Avitaminosis Baltimore Williams & Wilkins Company 1937

11 Perlmann S and Weber W Zur experimentellen Blasensteinerzeugung München med Wchnschr 77 680 681 (April 18) 1930

12 Higgins C C Experimental Production of Urinary Calculi J Urol 29 157 170 (Feb) 1933 Experimental Production of Urinary Calculi in Rats Urol & Cutan Rev 28 33 39 (Jan) 1934 Production and Solution of Urinary Calculi Experimental and Clinical Studies J A M A 104 1296 1299 (April 13) 1935

13 Feldman J B Instrument for Determining the Course of Dark Adaptation and for Measuring the Minimum Light Threshold Arch Ophth 12 91 (July) 1934 Dark Adaptation as a Clinical Test ibid 15 1004 1019 (June) 1936 A Graph of Recording Results in Dark Adaptation Am J Ophth 19 510 511 (June) 1936

Five of these patients had calculi in the kidney and x-ray examination revealed no decrease in the size of the stones

The fact that the effects of vitamin A therapy and a proper dietary regimen, as measured by dark adaptation, were practically nil, is in marked contrast to results reported by others in the treatment of conditions associated with vitamin A deficiency other than urolithiasis. Our observations are in accord with clinical studies reported by the Council on Pharmacy and Chemistry of the American Medical Association.¹⁵ Dark adaptation studies seem to confirm the suspected relationship between vitamin A deficiency and urolithiasis in human beings and to prove the failure of vitamin A therapy to correct pathologic dark adaptation in such cases.

It is possible that ingested vitamin A concentrate is not assimilated or utilized by the body and that the same metabolic disturbance may be the causative factor in urolithiasis.

The phenomenon of dark adaptation is quite familiar. The example of a person walking from the sunny street into a darkened theater and not being able at first to see the seats of the theater clearly is an example of the physiologic function of dark adaptation. Objects in the darkened theater become clearer, depending on the stay of the patient in the dark, i. e. in relative proportion to the regeneration of visual purple in the eye. The visual purple, it has been shown, functions by virtue of the vitamin A it contains. The study of dark adaptation could therefore be used to test the vitamin A in the system. Two factors must be taken into consideration, however, in a scientific study of vitamin A. First, the pupils of all patients must be equal, so as to allow an equal amount of light to enter the eye in all the cases studied. Second, all patients must be examined ophthalmoscopically to make sure that there is no disease of the choroid or deep retinal structures of the eye, since either of these will give a pathologic reading and may be misinterpreted as a vitamin A deficiency. The instrument that we used exactly simulates the phenomenon of entering the movie theater. The sun-lit street is artificially accomplished by the patient being light adapted for the same time in all cases. The dark adaptation is measured in milliamperes and photons by readings taken in absolute darkness, at various minute intervals. Graphs are made so as to compare results of one case with another easily.

ABSTRACT OF CASE HISTORIES

CASE 1—R De A, a woman aged 58 Italian, Italy
1925 Pseudolithotomy (right), stone reformed
1931 Pseudolithotomy (right)

1935 Bilateral renal calculi, poor functioning left kidney, nephrectomy (left)

1936 Calculus in right kidney, has increased in size
June 6, 1936 Pathologic dark adaptation

March 22, 1937 Slightly pathologic dark adaptation

CASE 2—D Z, a man, aged 44, Italian, Italy

March 1936 Passed small calculus, left ureter

June 17, 1936 Pathologic dark adaptation

March 29, 1937 Pathologic dark adaptation

CASE 3—J O, a man, aged 35, Italian, United States

March 1936 Calculus in right kidney pelvis, duration three months, pain, right renal

June 18, 1936 Pathologic dark adaptation

March 15, 1937 Pathologic dark adaptation

CASE 4—R M, a boy, aged 14, Italian United States

Calculus, right kidney pelvis. Anomalous vessel to lower pole, kinking ureter causing marked hydronephrosis

July 1936 Right nephrectomy

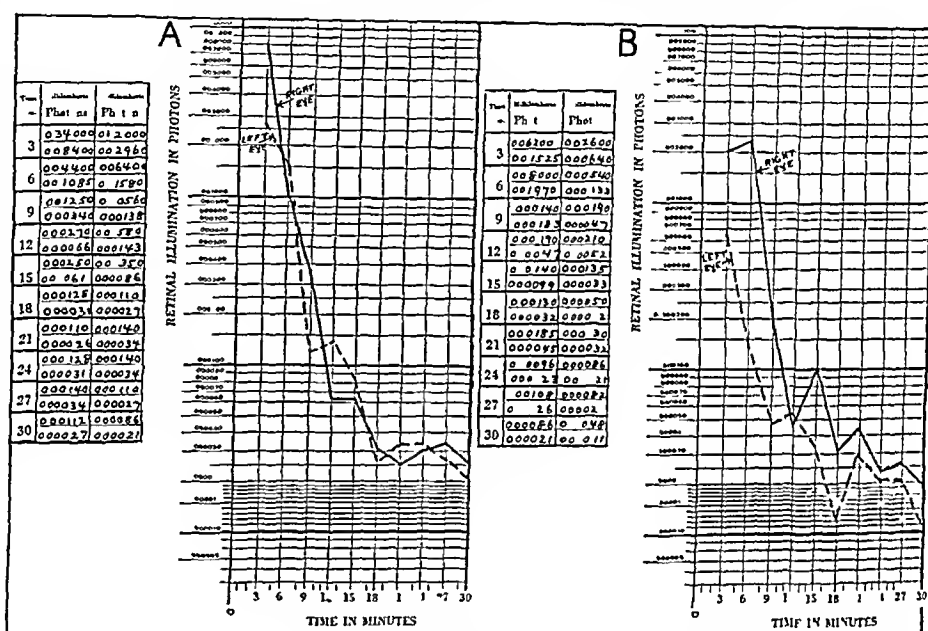


Chart 3 (case 1 group III)—R D a woman aged 49 with calculus of the right kidney (pyelolithotomy on the right in 1925 repeated in 1931 nephrectomy on the left—calculus pyonephros is—in 1935) had vision in the right eye of 6/6+2 and in the left eye of 6/6. Graphs of photons A June 6 1936 pathologic before treatment B March 22 1937 slightly pathologic after treatment

June 24 1936 Pathologic dark adaptation

March 12 1937 Pathologic dark adaptation

CASE 5—P L, a man aged 52 Italian, Italy

June 1931 Calculus in right ureter, ureter dilated, stone not passed

April 1932 Calculus in right ureter, ureter dilated stone not passed

June 1932 Exploratory exposure of right ureter, stone not passed

June 1936 X-ray examination negative for ureteral calculus

June 24 1936 Pathologic dark adaptation

April 2 1937 Pathologic dark adaptation

CASE 6—A Y, a woman aged 43 Jewish United States

Pyelitis for fifteen years passed calculus five years ago

Left kidney filled with several large calculi at present

June 6 1936 Pathologic dark adaptation

CASE 7—C S a man aged 37, American, United States

April 1934 Calculus in right ureter, passed spontaneously after ureteral dilation May 2 1934

May 1934 Calculus in left ureter, passed spontaneously after ureteral dilation one week later

June 6 1936 Pathologic dark adaptation

April 10 1937 Pathologic dark adaptation

15 On the Status of Certain Questions Concerning Vitamin A Preventing the Formation of Renal Calculi in Man report of the Council on Pharmacy and Chemistry J. A. M. A. 106 1732 (May 16) 1936

CASE 8—J B, a man, aged 25 Italian, United States
June 1936 Calculus in left ureter, passed after dilation
July 1, 1936 Pathologic dark adaptation
CASE 9—J L, a woman, aged 41, Jewish, Russia
1936 Pyelolithotomy (left)
July 2, 1936 X-ray examination showed large calculus
filling pelvis calices, left kidney, small shadows in right kidney
pelvis
December 1936 Passed calculus from right kidney spontaneously
July 1, 1936 Pathologic dark adaptation
CASE 10—A G, a man, aged 55, Jewish, Russia
June 1936 Calculus in lower right ureter, passed after
ureteral dilation
July 14 1936 Pathologic dark adaptation
March 26, 1937 Pathologic dark adaptation
CASE 11—M L, a man, aged 41, Italian, Italy
February 1936 First attack of renal colic
July 20, 1936 Calculus in right ureter, passed after
ureteral dilation
July 14, 1936 Pathologic dark adaptation
March 26, 1937 Pathologic dark adaptation
CASE 12—G I, a man, aged 46, Italian Italy
1931 Multiple calculi in left kidney and large calculus at
distal end of right ureter
May 1932 Ureterotomy (right)
October 1932 Left nephrectomy advised and refused
June 1936 X-ray examination showed large stag-horn
calculus in pelvis of left kidney
July 14, 1936 Pathologic dark adaptation
March 22, 1937 Pathologic dark adaptation
CASE 13—J M, a woman, aged 37, Italian, Italy
July 1933 Calculus in left kidney, pyelolithotomy
June 1936 Calculus in right kidney
July 14 1936 Normal dark adaptation
CASE 14—C L, a man, aged 41, Danish, Denmark
Calculus in right ureter, several attacks of renal colic
for past two years
July 1936 Passed calculus after ureteral dilation
July 21, 1936 Pathologic dark adaptation
March 29, 1937 Pathologic dark adaptation
CASE 15—H M, a man, aged 58, American United States
Calculus in lower pole of right kidney, also one in lower
pole of left kidney
March 1936 Passed small calculus
July 21, 1936 Pathologic dark adaptation
March 19, 1937 Pathologic dark adaptation
CASE 16—H M, a woman, aged 43, Negress, United States
1926 Right nephrectomy for calculous pyonephrosis
1932 Pyelolithotomy of left kidney
1936 No evidence of calculi at present, preventive treatment
Aug 4 1936 Pathologic dark adaptation
CASE 17—P G, a man, aged 35, Dutch, Netherlands
December 1934 Large stag-horn calculus of right kidney
(nephrectomy)
August 1936 No evidence of calculus in remaining kidney
(left), poor function of remaining kidney
Aug 4, 1936 Pathologic dark adaptation
CASE 18—T M, a man, aged 25, American, United States
1934 Right renal colic
June 1936 Right renal colic
August 1936 Calculus in right kidney pelvis
Aug 10, 1936 Pathologic dark adaptation
CASE 19—I L, a man, aged 44 Jewish, Russia
June 1936 Calculus in lower end of left ureter has had
chronic osteomyelitis of right arm, has had several operations
on right arm
Aug 11, 1936 Pathologic dark adaptation
March 29, 1937 Pathologic dark adaptation
CASE 20—H K, a man aged 27, Greek, Greece
1932 Calculus in lower end of right ureter No evidence
of calculi at the present time
Aug 18 1936 Pathologic dark adaptation

CASE 21—M V, a woman, aged 48, French France
November 1934 Left nephrectomy for calculous pyonephro-
sis No evidence of urinary calculi at present time
Sept 17, 1936 Pathologic dark adaptation
March 15, 1937 Pathologic dark adaptation
CASE 22—G K, a woman, aged 49, American, United States
October 1932 Right nephrectomy, calculous pyonephrosis
No evidence of calculi at present time
Sept 17, 1936 Pathologic dark adaptation
CASE 23—A S, a man aged 41, Italian, Italy
Renal colic (left) for four years
Aug 6 1936 Nephrectomy (left) calculous pyonephrosis
Sept 22, 1936 Pathologic dark adaptation
CASE 24—E DiA, a woman, aged 34, Italian, United States
May 1936 Ureteral lithotomy (right) Calculus at present
in pelvis of right kidney
Sept 30, 1936 Pathologic dark adaptation
March 19, 1937 Pathologic dark adaptation

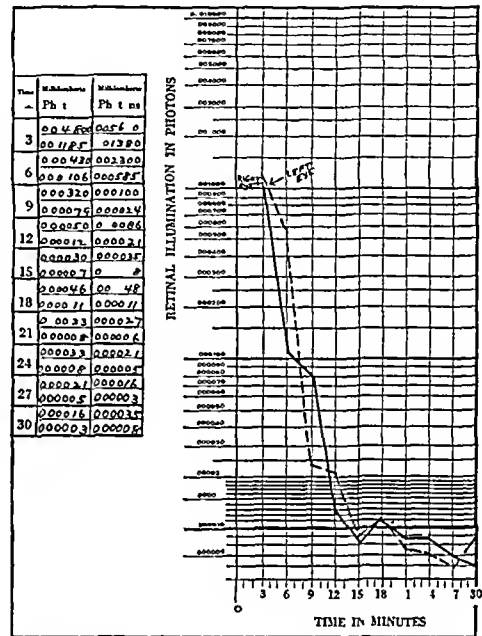


Chart 4 (control case)—A N, a woman aged 35 with alopecia areata but otherwise normal had vision in both eyes of 20/20 Jan 16 1937

CASE 25—H D, a woman aged 62, American, United States
1931 Left ureteral calculus
1933 Right ureteral calculus
1935 Left ureteral calculus All passed after dilation
No evidence of calculi at present time
Sept 18, 1936 Pathologic dark adaptation
March 12, 1937 Pathologic dark adaptation

SUMMARY AND CONCLUSIONS

- 1 Ninety-six per cent of the cases of renal urolithiasis were associated with vitamin A deficiency
- 2 Vitamin A deficiency was determined by the dark adaptation test with the Feldman technic and instrument
- 3 Twenty-four patients who showed this deficiency were given vitamin A concentrate varying from 13,000 units to 52,000 units daily over a period of from six to nine months
- 4 Of fifteen patients who returned for restudy, fourteen continued to show pathologic dark adaptation and only one showed improvement
- 5 This clinical study corroborates the results of investigations made on experimental animals so far as

the relationship between vitamin A deficiency and the pathogenesis of lithiasis of the upper urinary tract is concerned. It shows, however, that the beneficial effects of vitamin A therapy in experimentally produced urolithiasis in animals cannot be obtained in human beings.

6 The study shows that vitamin A deficiency in human beings with urolithiasis as measured by dark adaptation is influenced little if at all by vitamin therapy.

7 The patients improved in general health, and in no instance has an existing calculus increased in size or a new one formed while the patient was under regular vitamin A and appropriate dietary treatment.

8 The study seems to prove that vitamin A deficiency occurs in association with renal lithiasis but that such deficiency is dependent on lack of assimilation or utilization of this substance rather than on dietary deficiency.

9 This suggests the possibility that lack of vitamin A assimilation or utilization and urinary lithiasis may have a common metabolic basis.

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ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. RANDALL, EIMAN AND LEBERMAN, DRS. PRIESTLEY AND BRAASCH AND DRS. EZICKSON AND FELDMAN

DR. LEON HERMAN, Philadelphia. The observations of Dr. Randall and his associates are undoubtedly important. I understand that one theory in explanation of the subepithelium, extratubular deposits of calcium is that they result from an irritant contained in the urine, the concentration of which increases as the result of tubular reabsorption of water. It would seem that the effects of such irritation should be expended on the epithelium of the excretory ducts rather than on the subepithelial area. It seems to me more reasonable to attribute these formations to a blood-borne irritant, the problem appears to be a biochemical one. The work of my associates on vitamin A deficiency is also of importance. Dr. Feldman is well known among ophthalmologists for his studies in dark adaptation in diseases of the eye. Dr. Ezickson suggested that we ask Dr. Feldman to test some of our cases of urolithiasis, and the results of these studies have been analyzed today. Ninety-six per cent of patients with upper urinary lithiasis show marked loss of dark adaptation, while control cases are normal. They have shown further that this loss of dark adaptation cannot be corrected by vitamin A therapy. This is contrary to results obtainable in other conditions, especially in children, characterized by loss of dark adaptation. These results would seem to me to indicate that there has been a lot of loose talk about the value of vitamin A therapy in urolithiasis. The authors have suggested that lithiasis and loss of assimilation of vitamin A may have a common genesis. If we were able to explain inability of the stone-bearing person to utilize dietary vitamins it would in all probability do much to explain the genesis of stone.

DR. LINWOOD D. KEYSER, Roanoke, Va. A logical approach to the genesis of calculi demands a rigid differentiation of established facts from hypothetical considerations. It is known that excessive feeding by direct or indirect means of calcium oxalate or of calcium carbonate to animals produces stone, that calcium carbonate stones form at times in ulcer patients on intense alkaline calcium rich diets, that at times urate stones are associated with excess urate excretion, that hyperparathyroidism produces excessive urinary excretion of calcium phosphate and calculi. The term 'hyperexcretion calculus' more aptly describes this mechanism than vague references to metabolic error. Yet all the evidence is against hyperexcretion as the sole or even the most frequent cause of stone disease. Again it is known that biologically specific stone forming bacteria exist and after isolation from patients can be made by local or focal infection to reproduce calculus in animals, that alkaline infection is a frequent but not at all consistent accom-

paniment of stone as seen clinically. Experimentally, I have shown that the mechanism is an encrustation of necrobiotic epithelium with lime salts. Likewise quasiserial sections from calical tissue adjacent to stone in human beings shows lime salt deposition in and on the surface epithelium. Dr. Randall's remarkable anatomicopathologic demonstration of lime impregnated papillary plaques on the renal papilla is in line with this observation and a more detailed delineation of this encrustation mechanism. Also it is known that extreme vitamin A starvation will produce stone in animals. The mechanism here is also one of encrustation. These are the known facts. Beyond this knowledge our reasoning is speculative. Little evidence exists to show the relative incidence of hyperexcretion, of infection and of vitamin deficiency as the cause of stone in a given series of cases. The urinary colloids, the relative saturation of different salts in the urine, the acid-base reaction, and the temperature are variable agencies in the urinary solution mechanism. Disturbances of these factors singly or in combination as a probable cause of calculus remain to be disclosed. Most urologists have been disappointed in their efforts at dissolving calculi. It is true that soft carbonate or phosphatic masses do disintegrate at times on acidification of the urine with diet or drugs. Isolated cases of dissolution of urate and of cystine calculi by alkalization are recorded. Yet carefully controlled series of cases such as those reported recently from Dr. Beer's clinic show how far we are at the present time from possessing any type of therapy for consistently dissolving urinary calculi. Stone is still an object for surgical or instrumental removal in most instances. In prophylactic effort against recurrence, analysis of the calculus, appropriate change of the urinary reaction, elimination of infection and urostasis, together with correction of demonstrable metabolic error, are measures which will frequently, but not as often as we might desire, prove efficacious.

DR. JOHN H. MORRISSEY, New York. There is a considerable difference in the scientific approach to a clinical problem on the part of the urologist as compared with other specialists. Here the patient scientific investigator, untroubled by the cares of surgical practice, calmly attacks the problem and correlates his work with the observations of the clinician. But in urology it would seem that we do not hesitate to plunge headlong into a most complicated chemical, bacteriologic or physiologic problem and in a short time we know the cause and cure for every problem—urolithiasis most lately among the list. All this work, utterly unproved and uncorroborated by clinical investigators elsewhere than in these research centers, has done two things: complicated the clinical problem for the urologist and allowed in too many instances the patient to have the decision as to whether the stone should be dissolved, dieted out, or whatever may be the latest method that he has read about. Renal lithiasis experimentally produced in a couple of rats or guinea pigs is one thing. To apply freely the conclusions reached thereby to a human being is another. Urology more than any other specialty has rushed into print on its new ways, and I only have to cite hexylresorcinol, now available in tooth paste, among numerous remedies as examples of our discarded therapeutic procedures once loudly hailed and now forgotten. The problem for us is what to do with the patient with a renal stone too large to pass. The answer to my mind is removal of the stone by a competent surgeon. In the City Hospital in New York over a two year period we have been totally unable to influence the reduction in size or the disappearance of a calculus by any method, and a recent painstaking study by Dr. Pollack in Dr. Edwin Beer's service at Mount Sinai in twenty-six cases of stone produced absolutely no results along the line that we have been led to believe might be obtained and as being in the realm of possibility. In fact the stones in several of these cases increased in size. These results have been confirmed by others. To my mind there is no such thing as a silent stone. Sooner or later that stone will be heard from. The lithiasis patient should be thoroughly apprised at the outset as to his condition and not misled by what a diet has done to white rats. He should be made to understand that he has a problem which ultimately will be handled surgically. I have five patients at the moment with bilateral lithiasis who I hesitate to say are practically directing the conduct of their own cases. They know more about the various preparations of mandelic acid than I do.

Two of them have traveled to Cleveland for consultation and have availed themselves of an opinion from Baltimore. The indication in each of these cases is clear cut, yet they prefer to temporize, and I cannot convince them that they should consider operation at this time. May I suggest therefore that we label our researches in this important field as wholly experimental and speculative rather than clinically conclusive. In this way we shall render a greater service to the sufferer from stone rather than confuse his mind so that he delays radical treatment until infection has set in and the kidney has undergone destruction.

DR MILEY B. WESSON, San Francisco. The presentation of Drs Priestley and Braasch is sane and is based on a study of a sufficient number of personal cases to make the conclusions authoritative. There is no relationship between the severity of the pain and the size of the stone. It is universally agreed that a kidney calculus is potentially dangerous, but there are instances of stone in sterile urine in which, for various reasons, conservative procedures must be followed. In such cases the patient should be given an appropriate diet and mouth medication consisting of an acidifying agent (ammonium chloride, ammonium nitrate, mandelic acid) with methenamine in an attempt to dissolve the stone and ward off infection. At regular short intervals the voided urine should be examined for the presence of infection, and excretory urograms should be made to rule out beginning destruction of the kidney. There are three types of cases of stone too large to pass spontaneously: (1) those in persons whom we can honestly urge to submit to surgery, (2) those in which stones have reformed immediately after surgery and the subjects want assurance that if they submit a second time a third operation is not around the corner, and (3) those with silent bilateral pyonephrosis and staghorn calculi. Some authorities have reported the disappearance of stones under appropriate medication. Drs Priestley and Braasch have done in their series and my experience is in conformity with theirs. Some stones remain in statu quo for many years in an uninfected kidney. Several years ago one of my colleagues heard of a man, aged 43, who was reported to have "milk in his urine." Eventually he met the patient and found that his urine was filled with pus and not chyle. The patient had had a 2 cm stone removed from his right kidney in Auckland, New Zealand, in 1912 and had had no pains referable to the genito-urinary tract since that time. I found urethral strictures. Seventy cubic centimeters of thick pus was aspirated from the right kidney and 55 cc of hazy urine from the left. No phenolsulfonphthalein was excreted in twenty minutes and no neo-iopax in thirty minutes. The pyelograms were made by injecting 80 cc of 20 per cent iopax in the right kidney and 65 cc in the left. Last week his kidney function was as follows: Intravenously injected phenolsulfonphthalein appeared on the right in four minutes and on the left in seven minutes. The differential phenolsulfonphthalein test on the right was 10, 8, 8, 5, 4, 2, or 37 per cent, in one and a half hours, and on the left 10, 6, 4, 3, 2, 1, a total of 26 per cent in one and a half hours. The man is in apparently perfect health and working hard. He has not had any subjective symptoms related to his kidneys in twenty-five years and of course is not interested in more surgery. I believe this case report belongs with Drs Priestley and Braasch's silent renal calculi series, and I want them to tell me what to do with the patient.

DR STANLEY R. WOODRUFF, Jersey City, N. J. The size of the stone is of great significance, as bearing on the treatment, in view of the fact that a very small calculus in the kidney gives rise to few symptoms and little or no infection. The urologist should make several efforts at dislodgment of a small stone by suitable renal lavage before considering surgical removal. The greatest contraindications for operation when minute calculi are diagnosed are, first, the difficulty of making an accurate diagnosis, and, second, the possibility of not being able to find the small particle when operating. One is quite able to mutilate a kidney more in a few minutes by searching for a small nodule of calcareous material than by allowing it to lie in a kidney for several years. The relationship of renal function to late results has been ambiguous, according to my experience. This relationship may be difficult to explain. Often one finds the function of a kidney to be nil in the presence

of a calculus, but on removal of the latter there is a reestablishment of function to a normal output. It has been my custom to pay not so much attention to the actual function of a kidney, deciding treatment rather on the pyelographic examination. This has appeared to me to give a truer picture of the actual functional possibilities of the kidney, for I have noted on numerous occasions when little or no dye was excreted that pyelography showed practically no pelvic change. One can well expect in such an instance that the removal of a calculus will be followed by a return of functional capacity to probably the normal percentage. I do not believe that a stone is silent as often as one thinks. One expects that the only symptom a patient is going to complain about is pain, and the public expects to find this pain to be of an agonizing character. Most urologists will agree that the so-called renal colic is nearly always due to a dislodgment of a stone into the ureter and that the usual pain from a stone in the renal pelvis is more of the dull, aching character, except when it happens to plug the ureteropelvic junction. However, in patients with a renal calculus, a more or less pathologic urine is usually present, and in view of the fact that according to my experience indigestion is the most frequent symptom of renal calculus, these two symptoms may be screaming at one in the presence of the so-called silent stone.

DR HENRY SANGREE, Philadelphia. The major conditions now concerned in the production of calculi appear to center around the infective theory, the dietary theory and some unknown change in the cytoplasm of the cell or the "gerust" substance of the cell. Any one making a careful study of the calculi obtained from one's own series is astonished at the diversity of composition of different calculi obtained from the same kidney and the number of different components in one calculus. In an attempt to analyze a calculus one first examines it carefully with a hand lens, and often a small facet showing the original point of attachment to the renal papilla will be identified. The next step is to roentgenograph the stone to determine its density of shadow, an excess amount of calcium causing a greater density. If the stone is over 5 cm in diameter it should be sectioned, as a better roentgenogram will be obtained when it is of the same diameter throughout. The next procedure is to section the stone through the radius, if possible, and examine the separate layers or concretions formed in building up the calculus. The analysis of individual layers may show different components. If the calculus is of soft or friable material, as in a phosphate or urate stone, it is first mounted in Wood's metal, which will allow section of the stone without its destruction. If any small crystals are present they are examined under polarized light and also, by means of a goniometer, their crystallization system is determined. All patients who form and pass calculi should have a careful check of their parathyroids and tests of the calcium, phosphorus and uric acid content of the blood. A test of the voided urine for cystinuria is routine, and eye-ground examination for avitaminosis is requested. Any obstructive condition such as stricture of the urethra, ureter or ptosis of the kidney is diagnosed with pyelography and urography and treatment is instituted. In a paper previously reported I showed an incidence of 12.5 per cent of stones present in fused kidneys. This is considerably higher than the routine occurrence of calculi in kidneys seen at autopsy, and as histologic examination of the specimens revealed nephritis to be present in 80.5 per cent of fused kidneys, this examination would certainly support the infective theory of calculus formation. Biochemical research and physiologic investigation correlating with clinical examinations will determine the future solution of the problem of the origin and prevention of renal calculi.

DR ALEXANDER RANDALL, Philadelphia. I have been asked by Dr Hepler whether or not we examined the blood calcium in our dogs who were on administration of parathyroid extract. It was done weekly. It is rather hard to raise the blood calcium in a dog, it is even harder to hold it elevated, but we have been able to make the calcium go up to from 12 to 14 mg per hundred cubic centimeters in three dogs. The maximum has been 17, 18 and 19 mg, but they might be, in the next week, down to 11. Our entire effort has been to take the subject of renal calculus out of the mystic and theoretical and

to show that it is but a symptom of some basic preexisting renal disturbance. We have been able to show a precalculus lesion of the renal papilla which is definitely associated with the growth of stone. As soon as the physician grasps the simple, hard fact that renal calculus is but a symptom of some preexisting lesion, the knowledge of the origin and growth of renal stone will have been furthered tremendously and it can then be expected that a logical understanding of prevention will be possible.

DR. WILLIAM J. EZICKSON, Philadelphia. Those who are interested in seeing the clinical details concerning the operations and those who passed calculi spontaneously, many having a history of calculi over a period of ten or twelve years, will find all these detailed analyses and charts and graphs in the exhibit and we shall be pleased to show you all these charts before and after treatment.

THE ACTION OF THEOPHYLLINE WITH ETHYLENEDIAMINE

ON INTRATHECAL AND VENOUS PRESSURES IN CARDIAC FAILURE AND ON BRONCHIAL OBSTRUCTION IN CARDIAC FAILURE AND IN BRONCHIAL ASTHMA

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It has been definitely established that theophylline with ethylenediamine has a favorable influence on the dyspnea of cardiac failure.¹ These results have been attributed in part to the effect on the coronary and cerebral circulation. The present investigation was undertaken in the hope that further information might be obtained relative to the action of the drug in cardiac failure. We are concerned with the effect of the intravenous administration on the intrathecal and venous pressures and on bronchial obstruction.

In the study of the intrathecal pressures the patient was placed on the side in a horizontal position with the head supported by two pillows. The puncture was made in the lumbar region and the pressure recorded by a water manometer. Pressure applied to the cervical veins before and after each study always produced a temporary increase in pressure.

The venous pressure was measured by a modification of the method described by Hussey.² The apparatus consisted of a three way stopcock with a 22 gage needle attached to one opening, a glass manometer to another and a 30 cc syringe to the other. The needle, manometer and syringe were filled with 3 per cent sodium citrate solution. The system can be kept practically free of blood by proper manipulation of the stopcock and accurate measurements obtained for long periods. The pressures were obtained from the median basilic vein with the patient in the supine position and were

recorded in millimeters of 3 per cent sodium citrate solution. The arm remained at the same relative position to the heart during the period of study, but it was not always at the level of the right auricle.

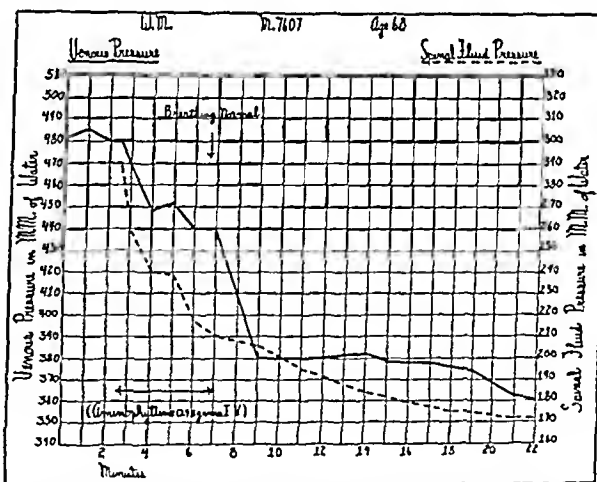
The vital capacity was measured by the usual method before and at fifteen and thirty minutes after injection of the drug.

These studies include observations on the intrathecal pressure alone in five normal subjects, fifteen patients with hypertension and arteriosclerosis without evidence of cardiac failure, six with congestive heart failure due to arteriosclerosis and hypertension, and four with intracranial lesions producing elevation of intrathecal pressures but with normal cardiovascular systems. Observations on the venous pressure alone were made in five normal subjects and in nine patients with congestive cardiac failure. In six patients with cardiac failure the effect on the venous and intrathecal pressures were measured simultaneously. Finally the effect of intravenous administration of the drug was observed on the bronchial obstruction in five patients during an acute attack of bronchial asthma associated with chronic pulmonary disease and in eleven cases in which the asthma was on an allergic basis.

The drug was given in doses of 0.48 Gm. diluted to 30 cc with physiologic solution of sodium chloride and from three to five minutes was required for the injection. Frequent measurement of arterial pressures showed no significant alteration in either systolic or diastolic pressures and no change in cardiac rate was noted in frequent electrocardiograms.

RESULTS

The results of the study on intrathecal pressure alone are summarized in tables 1, 2, 3 and 4. It is to be noted that a reduction in the pressure occurred in each



Time of onset and degree of reduction of venous and intrathecal pressures in a patient with congestive cardiac failure and Cheyne-Stokes respiration. It is to be noted that restoration of normal breathing coincided approximately with the maximum decline in the pressures.

instance. The effect reached its maximum after the injection of from 20 to 25 cc of the solution and coincided with the onset of the relief of dyspnea (cases 2, 4 and 6, table 3), and with restoration of regular breathing in those with Cheyne-Stokes respiration (case 5, table 3, and case 3, table 4). It is to be noted from tables 5 and 6, which summarize the results of the study on venous pressure alone that the pressure fell in all cases of cardiac failure. The maximum effect also coincided with injection of from 20

From the Department of Internal Medicine, State University of Iowa College of Medicine.

Read before the Section on Pharmacology and Therapeutics at the Eighty-Eighth Annual Session of the American Medical Association, Atlantic City, N. J., June 9, 1937.

1. Smith F. M., Rathe H. W., and Paul W. D.: Theophylline in the Treatment of Disease of the Coronary Arteries. *Arch. Int. Med.* 56: 1250-1262 (Dec.) 1935. Vogl A.: Erfahrungen über Euphyllin bei Cheyne-Stokes und anderen Formen zentraler Atemstörungen. *Med. Klin.* 28: 911 (Jan. 1) 1932. Guggenheimer H.: Ueber die Wirkungsweise des Euphyllins bei kardiovaskulärem Cheyne-Stokes und Asthma Cardiale. *Ztschr. f. Kreislauforsch.* 25: 98-109 (Feb. 1) 1933. Greene J. A., and Heeren R. H.: Observations on Cheyne-Stokes Respiration. The Effect of Drugs and Mechanical Means Which Produce Vasodilation and Vasoconstriction. *Medical Papers Dedicated to Dr. Henry A. Christian*. Baltimore: Waverly Press, 1936, pp. 51-59.

2. Hussey H. H.: Clinical Application of Venous Pressure Measurement. *N. Ann. Dis. Sect. of Columbia* 5: 232-237 (Aug.) 1936.

to 25 cc of the solution and with onset of relief of dyspnea (cases 2, 4, 6 and 7, table 6) and restoration of regular rhythm (cases 2, 5 and 9, table 6)

The observations on the simultaneous measurement of intrathecal and venous pressures are summarized in table 7. These show a close correlation as to the extent of the effect. The relation of time of onset and the character and degree of reduction of the two pressures are illustrated in the accompanying chart. In five of the six patients there was a very obvious relief from dyspnea. One remarked, "The position and needles

TABLE 1—Reduction in Intrathecal Pressure After the Intravenous Injection of Aminophylline (Theophylline with Ethylenediamine) in Patients with Normal Cardiovascular Systems

Case	Arterial Pressure	Intrathecal Pressure	
		Before Aminophylline, Mm	After Aminophylline, Mm
1	114/70	80	64
2	134/70	105	86
3	120/64	145	110
4	130/70	125	67
5	130/70	160	135

TABLE 2—Reduction in Intrathecal Pressure Which Occurred After Intravenous Injection of Aminophylline in Patients with Arteriosclerosis and Arterial Hypertension

Case	Arterial Pressure	Intrathecal Pressure	
		Before Aminophylline, Mm	After Aminophylline, Mm
1	160/80	85	15
2	200/110	170	150
3	228/120	155	117
4	218/138	247	198
5	180/110	260	217
6	200/118	234	135
7	100/100	175	110
8	230/150	230	115
9	230/140	180	155
10	204/110	140	116
11	200/110	170	150
12	170/110	280	160
13	240/120	245	165
14	208/110	286	180
15	140/116	185	135

TABLE 3—Reduction in Intrathecal Pressure After the Intravenous Injection of Aminophylline in Patients with Severe Congestive Cardiac Failure

Case	Arterial Pressure	Intrathecal Pressure	
		Before Aminophylline, Mm	After Aminophylline, Mm
1	200/114	136	112
2	224/148	254	235
3	250/100	180	155
4	160/100	260	160
5	200/130	320	240
6	140/80	250	250

were very uncomfortable but it was worth it", another, "I have not been able to breathe so easily in weeks." In the one case presenting Cheyne-Stokes breathing regular rhythm was restored. The respiratory distress was ameliorated in these patients from four to twenty-four hours.

Symptomatic relief occurred in all cases of asthma, as will be noted in tables 8 and 9 and the vital capacity increased in nine of eleven instances.

COMMENT

These studies show that the improvement in dyspnea and the conversion of periodic breathing to a regular rhythm in cardiac failure are related to the decline in intrathecal and venous pressures produced by the intravenous administration of theophylline with ethylene-

TABLE 4—Reduction in Intrathecal Pressure Following the Intravenous Injection of Aminophylline in Patients with Intracranial Lesions

Case	Arterial Pressure	Intrathecal Pressure	
		Before Aminophylline, Mm	After Aminophylline, Mm
1	92/58	210	180
2	108/58	276	150
3	142/92	645	555
4	130/80	225	130

TABLE 5—Effect of Intravenous Injection of Aminophylline on the Venous Pressure in Patients Without Cardiac Failure

Case	Venous Pressure	
	Before Aminophylline, Mm	After Aminophylline, Mm
1	113	103
2	45	45
3	138	110
4	67	43
5	123	110

TABLE 6—Reduction in Venous Pressure After the Intravenous Administration of Aminophylline in Patients with Cardiac Failure

Case	Venous Pressure	
	Before Aminophylline, Mm	After Aminophylline, Mm
1	155	129
2	340	180
2	310	185
2	280	215
3	125	85
4	350	300
5	218	188
6	225	176
7	205	128
8	175	125
9	245	171

diamine. Harrison³ noted a temporary improvement in respiratory distress in cases of heart failure following removal of cerebrospinal fluid. He also observed a parallel decline in venous and intrathecal pressures which corresponded in general to the extent of recovery from cardiac failure. Loman and Myerson⁴ report a reduction in intrathecal pressure in normal subjects following the administration of caffeine.

There is a difference of opinion regarding the importance of the elevation of cerebral venous and intrathecal pressures in the production of dyspnea and orthopnea in cardiac failure. Harrison³ found that the intrathecal pressures measured from the cistern were greater in the horizontal than in the sitting position and sug-

3 Harrison W G. Cerebrospinal Fluid Pressure and Venous Pressure in Cardiac Failure and Effect of Spinal Drainage in the Treatment of Cardiac Decompensation. Arch Int Med 53: 782-791 (May) 1934.

4 Loman Julius and Myerson Abraham. The Action of Certain Drugs on the Cerebrospinal Fluid and on the Internal Jugular Venous and Systemic Arterial Pressure of Man. Arch Neurol & Psychiat 27: 1226-1244 (May) 1932.

gested that the increased pressure in the former position is a factor in the production of orthopnea. Ernstene and Blumgart⁵ called attention to the parallelism between orthopnea and the elevation of venous pressure. They concluded that the latter reduces the circulation to the respiratory center and thus contributes to the production of orthopnea. Calhoun, Cullen, Harrison, Wilkins and Tims,⁶ on the other hand, doubt that the increase in cerebral venous pressure is a factor in the production of dyspnea or orthopnea. They were unable to produce respiratory distress in normal subjects or to increase it in cases of cardiac failure by an elevation of the cerebral venous pressure by partial obstruction of the cervical veins.

Our observations confirm those of Harrison³ relative to the close relationship of the increased venous and intrathecal pressures in cardiac failure and the observation that a reduction in these pressures has a favorable influence on the dyspnea. They show also that this effect may be produced by the intravenous administration of theophylline with ethylenediamine. Moreover, this drug ameliorates the bronchial obstruction in both bronchial asthma and cardiac failure.

These results provide further information regarding the effect of theophylline with ethylenediamine in cardiac failure, but the mechanism of the action, except for that on the heart, is not clear. It is hoped that the studies now in progress may throw additional light on the subject.

TABLE 7—Reduction in Venous and Intrathecal Pressures When Measured Simultaneously Following the Intravenous Injection of Aminophylline in Patients with Cardiac Failure

Case	Venous Pressure		Spinal Fluid Pressure	
	Before Aminophylline mm	After Aminophylline mm	Before Aminophylline mm	After Aminophylline mm
1	195	175	163	132
2	532+	440	400+	261
3*	428	416	180	150
4	190	153	300	321
5	175	120	270	200
6	400	360	300	171

* Patient did not cooperate satisfactorily.

TABLE 8—Change in Vital Capacity and the Subjective Relief Obtained in Patients with Asthma Associated with Chronic Pulmonary Disease When Aminophylline Was Injected Intravenously During an Acute Attack

Number	Vital Capacity Before Aminophylline Liters	Vital Capacity 15 Minutes After Aminophylline Liters	Subjective Relief
1	1.4	2.2	Yes
2	3.1	4.2	Yes
3	*	1.5	Yes
4	2.2	2.2	Yes
5			Yes temporarily

* Patient too dyspneic to be measured.

SUMMARY

The effect of the intravenous administration of theophylline with ethylenediamine on the intrathecal and venous pressures, measured separately and simul-

taneously, has been studied in normal subjects, in patients with cardiac failure and in patients with cerebral lesions. The effect on bronchial obstruction has been studied in patients with bronchial asthma associated with chronic pulmonary disease and in patients in whom the asthma was on an allergic basis.

TABLE 9—Change in Vital Capacity and the Symptomatic Relief Obtained in Patients with Allergic Asthma When Aminophylline Was Injected Intravenously During an Acute Attack

Number	Vital Capacity Before Aminophylline Liters	Vital Capacity 15 Minutes After Aminophylline Liters	Subjective Relief
1	0.2	0.6	Yes
2	4.6	5.6	Yes
3	0.8	0.8	Yes
4*	0.6	2.4	Yes
5*	0.4	2.0	Yes
6*	1.8	2.0	Yes
7	1.0	2.2	Yes
8			Yes
9			Yes
10			Yes
11			Yes

* These patients also had pulmonary emphysema secondary to allergic asthma of many years duration.

The results show a correlation between elevation of venous and intrathecal pressures in cardiac failure. Furthermore, relief of dyspnea or restoration of regular rhythm in Cheyne-Stokes breathing is related to the decline observed in intrathecal and venous pressures following intravenous administration of theophylline with ethylenediamine.

Finally, theophylline with ethylenediamine has a favorable action on bronchial obstruction both in bronchial asthma and in cardiac failure.

ABSTRACT OF DISCUSSION

DR G. K. FENN, Chicago. Dr. Greene and his associates have pointed out some incontrovertible facts and have left little opportunity for discussion except to speculate on the causes of these phenomena. I am interested in the results because they may indicate improvement in the general circulatory efficiency rather than specific action on the respiratory mechanism. In my work on the coronary circulation I have been impressed with the ability of a deficient coronary flow to produce symptoms of cardiac dysfunction other than angina pectoris or anginal pain. In many instances heart failure has been overcome with no treatment other than that which tends to improve the coronary flow. It is well known that heart failure is invariably associated with increased venous pressure. As the cardiac efficiency improves, the venous pressure falls. Cyster cites a particularly informative case in which the pressure fell, rose, fell and rose in the course of hours during an attempt to convert an auricular fibrillation to normal rhythm with quinidine. This is evidence to indicate that the cerebrospinal fluid pressure follows the venous pressure. Whatever the causes of cardiac dyspnea or Cheyne-Stokes respiration may be, these causes are activated by heart failure, and improvement in the failure results in improvement in the respiratory difficulty. Dr. Gilbert and I have observed in experimental work on the coronary flow tremendous increases in flow, sometimes up to 300 or 400 per cent as a result of injection of the purine base derivatives. These increases are evident in from thirty to sixty seconds after injection. I realize that the intravenous administration of these drugs builds up an effective concentration in the tissues that cannot be duplicated by oral administration and therefore such spectacular results as these would not be likely to be produced by any means other than intravenous injection. My observations would lead to the conclusion that theophylline with ethylenediamine is no better than other members of this group in the production of coronary dilatation.

5. Ernstene, A. C. and Blumgart, H. L. Orthopnea. Its Relation to the Increased Venous Pressure of Myocardial Failure. Arch. Int. Med. 45: 593-610 (April) 1930.

6. Calhoun, J. A., Cullen, G. E., Harrison, T. R., Wilkins, W. L. and Tims, V. M. Studies in Congestive Heart Failure. VI. Orthopnea. Its Relation to Ventilation, Vital Capacity, Oxygen Saturation and Acid Base Condition of Arterial and Jugular Blood. J. Clin. Investigation 10: 835-855 (Oct.) 1931.

indeed, it is equal to some others. The ethylenediamine renders the mixture soluble and thus suitable for intravenous administration. This compound appears to be the only one easily available today that lends itself to intravenous injection. It seems entirely possible that the intravenous injection of this compound with its immediate and considerable improvement in the coronary flow may well account for the reduction in venous and intrathelial pressure and the attendant improvement in respiration solely because of the improvement in general circulatory efficiency. If this hypothesis should prove to be correct, it should spur us on to search for some coronary dilator that may be given with equally good results by a less objectionable route.

DR T. R. HARRISON, Nashville, Tenn. Cardiac dyspnea is a complex phenomenon. In patients with Cheyne-Stokes respiration in association with cardiac dyspnea, one of the several factors that may be concerned is an increase in the cerebrospinal fluid pressure, because Cheyne-Stokes respiration is seen in persons without heart disease who have increased intracranial pressure. The results in patients who do not have Cheyne-Stokes respiration but who are more or less constantly dyspneic, or in patients who have paroxysmal dyspnea, have also been good. But I am not certain as to the explanation. It cannot be emphasized enough that these compounds are not only of value in the treatment of edema but are often helpful in the treatment of patients who have little or no obvious edema. I am not certain how that comes about. One of the possible explanations is the increase in coronary circulation. If after administration of a diuretic drug the venous pressure declines as a result of improved cardiac function, it is quite likely that the pulmonary venous pressure will drop also, and this may be responsible for the increase in vital capacity. Another possible mechanism may be concerned in the improvement of the xanthine group of drugs in the absence of marked diuresis. This is loss of edema either in the kidney or in the heart muscle. Such edema does sometimes occur and the heart might very well function better if even a few cubic centimeters of water were lost from the myocardium. Another possible mechanism of beneficial effects of these drugs, although it is hard to see how it could come about so quickly, is diminution in blood volume. One would think that this would not occur unless there was a slight diuresis. My feeling about cardiac dyspnea is that the most important factor in its production is pulmonary congestion. That is by no means the only factor. There are other conditions which aggravate it and which determine whether or not a patient with a given degree of pulmonary congestion will be short of wind. Among those conditions are certain chemical changes that sometimes occur in the composition of the blood, which according to my experience are frequently absent, changes in cerebral circulation, and, quite important, reflex influences from various parts of the body which affect respiration. I would like to state that the person who did the original work on spinal fluid pressure in subjects with heart failure and showed that patients with cardiac failure often have elevated spinal fluid pressure and may be benefited by spinal puncture was not myself but my brother, Dr W. G. Harrison, Jr.

DR ALYAN L. BARACH, New York. I should like to ask whether the authors used this drug in cases of asthma that had become refractory to epinephrine.

DR JAMES A. GREENE, Iowa City. I wish to thank Dr Fenn and Dr Harrison for their very illuminating discussion. With regard to the question whether or not the vital capacity increases in patients with cardiac failure following intravenous administration of this drug, all I can say is that in some cases there is a definite increase. I do not have the figures available. We are studying this phase along with some other factors of respiration in these patients. The mechanism by which the drug relieves the respiratory dyspnea in patients who have a regular rhythm I am not able at this point to say, I don't know. In answer to Dr Barach's question, we have used it in several cases of bronchial asthma which were epinephrine fast and we have obtained very good results in most of them. We have one or two that have not responded to the intravenous administration of theophylline with ethylenediamine but have responded to epinephrine.

IODOBISMITOL IN THE TREATMENT OF SYPHILIS

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AND

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Iodobismitol contains 6 per cent of sodium iodobismuthite and 12 per cent of sodium iodide. The original solvent, ethylene glycol, has been replaced recently by propylene glycol, and 4 per cent of saligenin has been added as a local anesthetic. Iodobismitol was introduced by Hanzlik¹ in 1932 after prolonged experimental study. The preparation was first used clinically by Mehrtens and Pouppirt,² who reported favorable results in the treatment of neurosyphilis. The rapid involution of both early and late syphilis after the administration of iodobismitol was observed by Strandberg and Sjogren.³ No reports of the use of this preparation in the routine treatment of syphilis have been made as yet.

During the last six years iodobismitol has been used almost to the exclusion of other bismuth compounds in the Syphilis Clinic of the Stanford University School of Medicine. More than 125,000 injections have been given to approximately 3,000 patients. All but 827 of these patients have been excluded from the present study, either because iodobismitol was used simultaneously with other drugs or because less than one full course of twenty injections was given. These 827 patients received a total of 51,655 injections, an average of sixty-two per patient.

Of the 827 patients, 500 were male and 327 female. The ages ranged from 15 to 77, the mean being 39. The males averaged 41 and the females 36. Seven hundred and twenty-nine patients were of the white race, seventy-two were Negro and twenty-six were Oriental. Most patients with early syphilis were excluded because treatment was not started with iodobismitol alone. Four hundred and ten patients were in the latent stage, the duration of the infection in fifty-seven being less than four years. One hundred and two had benign tertiary lesions and thirty-seven late syphilis of the cardiovascular system. Neurosyphilis was present in 284 patients. The involvement was asymptomatic in seventy-six of these and of the meningo-vascular type in thirty. Parenchymatous involvement occurred in 177 patients, 100 having tabes dorsalis and seventy-seven dementia paralytica. The tabetic form of dementia paralytica was included with dementia paralytica. The infection was prenatal in seven patients, all of whom had neurosyphilis. In forty patients more than one form of late syphilis was present. Of these, thirty-nine had involvement of the nervous system, it was associated with benign tertiary lesions in twenty-seven and with cardiovascular lesions in twelve. In one patient with cardiovascular syphilis, benign tertiary lesions were also present.

History of a genital lesion, probably indicating the onset of infection, was obtained from 56 per cent of

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1. Hanzlik, P. J., Mehrtens, H. G., Gurchot, C., and Johnson, C. C. Iodobismitol: Soluble Bismuth Product for Use in Treatment of Syphilis. *J. A. M. A.* 98: 537 (Feb. 13) 1932.

2. Mehrtens, H. G., and Pouppirt, P. S. Iodobismitol in the Treatment for Neurosyphilis. *Arch. Neurol. & Psychiat.* 26: 1220 (Dec.) 1931.

3. Strandberg, J., and Sjogren, B. Klinische und experimentelle Untersuchungen über Bismut im Amion besonders als Iodobismutit. *Acta dermat. venerol.* 14: 1 (June) 1933.

the males and 20 per cent of the females. Fifty-eight per cent of the patients had received no previous treatment, and an additional 10 per cent had been given very little treatment (less than ten injections). Thirty-six per cent had been treated insufficiently (less than one year), and the previous treatment of only 6 per cent seemed to have been adequate.

The iodobismutol was given in doses of 2 or 3 cc intramuscularly, from one to three times weekly, in series of twenty or more, usually alternated with courses of the arsenicals.

A detailed history was taken and a complete physical examination was made when the patient was admitted to the clinic. The examinations were repeated at six month intervals both during and after treatment. In most cases urinalyses were made and the serologic reactions determined at the end of each course, or at approximately four month intervals.

The average period of observation for the 827 patients was two and one-tenth years. One hundred and eighty-seven were followed for more than three years and only forty-three for less than six months. The majority are either under treatment or under observation at the present time.

Treatment was regarded as regular if more than 70 per cent of the scheduled appointments for treatment were kept. According to this standard, 686, or 83 per cent, of the patients received regular treatment.

The effectiveness of treatment was determined by the rate of disappearance of lesions with the patient under treatment with iodobismutol alone, by clinical improvement and by changes in the reaction to serologic tests on the blood and the cerebrospinal fluid.

Since the majority of the patients in this series had late syphilis, infectious relapse was not to be expected. Among the fifty-seven patients with early latent syphilis, this occurred but once, following inadequate and irregular treatment. Relapse in the form of benign tertiary lesions did not occur.

TABLE 1—Changes in the Wassermann Reactions of the Blood Following Twenty Doses of Iodobismutol in 456 Patients with Strongly Positive Initial Reactions

Serologic Response	Type of Syphilis		
	Latent	Benign	Cardiovascular or Syphilis of the Central Nervous System
Number of patients	274	83	99
Unchanged	63%	76%	81%
Improved	20%	13%	13%
Reversed	15%	9%	6%

Data as to the rate of involution of benign tertiary lesions of the skin and bones were obtained in twenty-nine cases. Complete involution of the lesions occurred in an average of twenty-five days with six and one-tenth doses of iodobismutol (122 cc). Wassermann and Goodman⁴ reported the healing of similar lesions with the patient under arsphenamine therapy in about the same period.

A symptomatic response was observed in thirty patients with dementia paralytica and in thirty with tabes after forty or more injections of iodobismutol alone. Of the patients with dementia paralytica, twenty-one were improved, three were unchanged and six

became worse. In the group with tabes, twenty-two were improved, six unchanged and two worse. The satisfactory clinical results observed in patients with neurosyphilis confirm the experience of Mehrtens and Pouppirt. In a subsequent paper a more detailed analysis of the results obtained in the treatment of neurosyphilis with iodobismutol will be reported.

The symptomatic response was determined after twenty or more doses of iodobismutol, usually supplemented by doses of the arsenicals, in twenty-seven

TABLE 2—Incidence of Wassermann Fastness in Patients Treated with Iodobismutol Alone or in Alternation with an Arsenical

Type of Syphilis	Number of Patients	Wassermann Fastness	
		Iodobismutol	Other Heavy Metal Preparation
Latent	230	48%	11%*
Benign tertiary	69	68%	69%†
Cardiovascular and syphilis of the central nervous system	114	69%	

* Moore, J. E., and others: *Cooperative Clinical Studies in the Treatment of Syphilis. The Treatment of Latent Syphilis*. Ven. Dis. Inform. 13: 371 (Oct. 20) 1932 (includes Wassermann relapse).

† Moore, J. E.: *The Modern Treatment of Syphilis*. Springfield, Ill., Charles C. Thomas, Publisher, 1933, p. 272.

patients with aortic regurgitation or aneurysm. Improvement occurred in twelve, thirteen were unchanged and two became worse. Although the number is small, it is interesting that only two of the twenty-seven patients had progression of symptoms during treatment.

Wassermann tests of the blood were made before treatment was started in 806 cases. In 624 the reaction was strongly positive, in 104 weakly positive and in seventy-eight negative. In 456 cases in which the reaction was strongly positive, the tests were repeated after the initial course of twenty injections of iodobismutol. The changes in the serologic reactions are given in table 1.

The effect on the Wassermann reaction of the blood of forty or more doses of iodobismutol without other therapy was noted in sixty-one patients. The majority of these had late syphilis of the cardiovascular or nervous system. The degree of positivity was decreased in 61 per cent, unchanged in 34 per cent and increased in 5 per cent.

Iodobismutol does have some effect in reducing the Wassermann reaction, as shown in table 1, since 35 per cent of the patients with latent syphilis and 20 per cent of those with tertiary syphilis showed improvement after a single course of twenty injections.

The incidence of Wassermann fastness in 418 patients was determined, the majority receiving arsenicals in addition to iodobismutol. A strongly positive Wassermann reaction following one year of treatment, without regard to the intervening reactions, was interpreted as indicative of Wassermann fastness. Intervening reactions were disregarded, since these were sometimes not determined. The data are given in table 2.

The incidence of Wassermann fastness in patients with latent or benign tertiary syphilis is approximately the same as that observed by Moore and the Cooperative Clinical Group. In patients with late syphilis of the cardiovascular or the nervous system, the incidence of Wassermann fastness varies from the 30 per cent reported by Stokes and Busman⁵ for neurosyphilis to

⁴ Wassermann, Harry, and Goodman, M. J.: The Results of Treatment in Late Mucocutaneous and Osseous (Benign Late) Syphilis. *Am. J. Syph. & Neurol.* 18: 59 (Oct.) 1934.

⁵ Stokes, J. H., and Busman, G. J.: A Clinical Study of Late Fast Syphilis. *Am. J. Sc.* 160: 63 (Oct.) 1937.

the 80 per cent estimated by Moore⁶ for dementia paralytica. These variations may be due in part to differences in the sensitivity of the tests used. Although our figure of 69 per cent is higher than that commonly reported, it falls within these limits.

The spinal fluid of 576 of the 827 patients in this series was examined one or more times. At the initial examination the fluid of 52 per cent was normal. Three per cent of the fluids were of type I, 29 per cent of type II and 16 per cent of type III. The classification used was that suggested by Moore.⁷

In 151 cases in which the initial reaction of the fluid was positive, one or more reexaminations were made after various amounts of treatment. The treatment included at least twenty injections of iodobismutol, usually in conjunction with other drugs, but excluded fever therapy. At least six months intervened between the examinations. The changes in the spinal fluid after treatment are compared with the results of the initial examination in table 3.

The reactions of approximately one third of the abnormal spinal fluids were reversed and those of an additional one third were improved after the administration of iodobismutol alone or in conjunction with other drugs, indicating the effectiveness of this form of therapy.

Before each injection patients in this clinic are questioned regarding reactions to the previous treatment. Specific questions are asked concerning nausea or vomiting, diarrhea, abdominal pain, stomatitis, headache, dizziness, chills or fever, pruritus, eruptions and local reactions. The presence or absence and the severity of each reaction are recorded. By this method complaints not due to treatment may be recorded occasionally as reactions. However, by any other method many minor reactions are not detected.

No fatalities from the use of iodobismutol have occurred, although more than 125,000 doses have been given. In only four instances has necrosis occurred at the site of injection, and in at least one of these the reaction was due to local arterial embolism.

The reactions following 43,812 injections of iodobismutol given to 827 patients have been recorded. The

had been given. The lesions were dusky red desquimating plaques, often numerous and in a suggestive aural distribution, but lacked the fawn-colored center and brightly erythematous periphery of pityriasis rosea. Exfoliative dermatitis did not occur.

The most frequent mild local reaction was a burning pain lasting for a few minutes. Less frequently, slight discomfort began several hours after injection and persisted for a day or more. Reactions of these types occurred more often after the first few injections.

TABLE 4—Incidence of Reactions to Iodobismutol

Type of Reaction	Incidence of Reactions (Percentage)
Nausea or vomiting	0.7
Diarrhea	0.2
Abdominal pain	0.4
Stomatitis	0.4
Headache	2.0
Dizziness	0.7
Chills or fever	0.4
Eruption	0.3
Mild local reaction	7.5
Severe local reaction	0.5

Local reactions were classified as severe if the pain was intense or persisted for more than a few days.

On the whole, the reactions to iodobismutol were slight. In only three of the 827 cases was it necessary to discontinue the drug because of intolerance. A total of ninety-three patients experienced no reaction whatever to any of the injections.

In 756 cases routine urinalyses were made before and during treatment, usually at intervals of four months. The urine remained normal in 742. In four patients with evidence of slight renal damage prior to treatment, there was no progression of the renal lesion. The urine became abnormal during treatment in nine cases. In five of these there were moderate amounts of albumin, and in four, granular casts appeared. In no instance did severe renal damage occur.

SUMMARY

The value of iodobismutol used alone or in alternation with the arsenicals was observed in 827 patients with various forms of late syphilis. The rate of involution of lesions, the symptomatic response and the effect on the serologic reactions of the blood and cerebrospinal fluid were determined. Because of its effectiveness and the relative freedom from reactions, iodobismutol is a satisfactory preparation of bismuth for use in the treatment of syphilis.

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ABSTRACT OF DISCUSSION

DR. M. T. VAN STUDDIFORD, New Orleans. The authors have given a thorough study of their work on iodobismutol and have shown that it has a place among bismuth preparations in the treatment of syphilis. Iodobismutol is absorbed quickly and is also lost quickly. It is therefore harder to keep the bismuth at a certain level. Injections, therefore, must be more numerous than in the water insoluble bismuth in oil preparations. I have used iodobismutol early in syphilis and especially for patients who have had no treatment. I also used it to start off the treatment. Later I have changed to the bismuth preparations, usually subsalicylate. Iodobismutol is less painful than the water soluble preparations and therefore it is quite a good bismuth for the institution of bismuth treatment.

DR. JOHN H. STOKES, Philadelphia. The more one uses bismuth in the treatment of syphilis the more one's respect for properly chosen bismuth compounds increases and the more one believes that in some of the late aspects of the disease it could largely replace the arsenicals. Studies such as those of

TABLE 3—Comparison of the Changes in the Spinal Fluid After and Before Treatment with Iodobismutol, Usually in Conjunction with Other Drugs

Initial Type of Cerebrospinal Fluid	No. of Cases	Reversed	Improved	Unchanged	Worse
II	98	37%	24%	33%	4%
III	53	9%	62%	26%	2%
Total	151	27%	38%	32%	3%

Including two fluids of type I the reaction of both of which was reversed.

incidence of various types of reactions is given in table 4. In many instances more than one form of reaction occurred after a single injection. The number of doses producing reactions therefore cannot be obtained by adding the individual types.

All degrees of oral reaction are included under the term stomatitis. The majority of such reactions were entirely subjective, and only rarely was pigmentation or actual stomatitis observed. The eruptions almost always simulated pityriasis rosea, were usually limited to the trunk and appeared after a number of injections.

⁶ Moore, J. E. *The Modern Treatment of Syphilis*. Springfield, Ill., Charles C. Thomas, Publisher, 1933, p. 426.
⁷ Moore, J. E. *The Modern Treatment of Syphilis*, p. 467.

Barnett and Kulchar should precede and not follow the introduction of the product, and no bismuth compound should be introduced until chemically controlled studies of its rate of elimination form part of the original report. The exercise of adequate controls is difficult, because bismuth is rarely used alone. Even the authors in this excellent study are discussing the action of a bismuth compound used in conjunction with an arsenical, and other able observers have overlooked the same principle. Only by paralleling the alternate use of an arsenical and iodobismutol with the identical alternate use of the same arsenical and another bismuth compound of better known properties can an adequate comparison be made. As a user of bismuth iodine compounds I have a distinct impression that the iodine distinctly steps up the effectiveness of the bismuth. All complex heavy metal compounds used for treatment should be studied as Lomholt studied mercuric salicylate to determine the proportion of the compound eliminated as such, as well as that which was broken down to provide ionic heavy metal for organic combinations within the body. Elimination of the complex unchanged heavy metal molecule may conceivably defeat the antisiphilitic effectiveness of a drug. All discussion of reactivity to an intramuscularly injected drug has an element of technic which makes comparison among different observers almost useless. The single item of massage following injection is capable of changing the entire local reaction report in a series of patients or injections. With well tolerated preparations like iodobismutol, one must watch the temptation to go on and on indefinitely in longer and longer courses, without an adequate knowledge of the rate of elimination. Serologic interpretations of the effectiveness of bismuth I believe involve a distinct peculiarity of the drug. It seems much slower in reversing complement fixation and precipitation tests than does mercury, so that the optimum time to gage the result of a bismuth course is not so much at the end of the course as at the beginning of the next course. This should be recalled in cases of supposed Wassermann-fastness occurring under arsenical-bismuth therapy.

DR HAROLD N COLE, Cleveland. In using a bismuth compound, it depends quite a lot on the preparation in which it is dissolved or in which it is held in suspension. The authors spoke of the fact that these injections were given one, two or three times a week. With the preparations that are dissolved in water, or in one of the solvents like ethylene glycol, we are dealing, of course, with a soluble product, and it is only by studies on excretion in the urine and in the feces, particularly in the urine, that one can be sure about the level of the bismuth in the blood stream, and that is what one is working at. It is not the amount of bismuth that is necessarily deposited in the muscle. What one desires is to achieve a level in the blood stream that will be therapeutic in character and that can be kept at that therapeutic level over a period of time. Otherwise, one may have a preparation, like some of the preparations dissolved in water, in which one has an excretion that will run up to 8 or 10 mg in twenty-four hours and come down just as rapidly, so at the end of twenty-four hours one has practically no therapeutic effect as far as bismuth in the blood is concerned. On that account there are certain of the bismuth products that must be given at least three times a week, and even then one is not sure of a therapeutic level. In Dr Sollmann's laboratory at Western Reserve we have been studying iodobismutol, and this does seem to be one of those products in which one can have a satisfactory level of bismuth in the blood stream by giving the injections twice a week. Now, of course, that does not always mean a product that can be used in office practice. Generally, one is unable to get the patient to come twice a week, once a week is about as often as he will be willing to make a visit and take his treatment. I should like to ask the authors how long at one time they have given these injections of iodobismutol, and how long they think it will be safe to continue these treatments. Dr Svend Lomholt suggested that a bismuth product, to be effective, would have to contain about 0.5 mg of bismuth per kilogram. I think a better measure of the effectiveness of a product is a study of the bismuth excretion in the urine which would be an indication of its level in the blood stream. And in this study that I have spoken of we have found that with iodobismutol given twice a week we can keep the level between 2 and 4 mg

of bismuth in the urine right along, and I think that is a satisfactory level. Anything above 2 mg in the urine should give satisfactory therapeutic results.

DR PAUL E BECHET, New York. The report by the authors of 75 per cent of local reactions seems high. I have used iodobismutol very considerably, with little or no complaint of pain from the patient, I am referring to private patients, and the injections were administered by myself. In advocating thorough massage, Dr Stokes has stressed a most important point. Equally important is the injection of 1 cc of air, after the iodobismutol injection has been completed in order that the drug may not be spilled into the subcutaneous tissues on the withdrawal of the needle. Both these facts are of course well known but are not practiced as much as they should be, particularly by nurses and technicians.

DR GEORGE V KULCHAR, San Francisco. In reply to the contention of Dr Van Studdiford that iodobismutol closely parallels the water soluble bismuth compounds, in our experience, and from the experimental excretion studies, its behavior closely approximates that of the oil soluble compounds and, following the single injection, bismuth is excreted for more than sixteen days, the peak period being reached about the third or fourth day. Regarding Dr Coles question, we had at the outset of this study a group of patients who were treated three times a week for as long as two years. One of the patients received more than 300 consecutive injections of iodobismutol without any systemic manifestations. We realized that our figure of 75 per cent of local reactions is unusually high, but it is quite explainable since these injections were given by medical students as they rotated through the clinic and were given standing up without any supplementary massage. Furthermore, I think that by our method of asking specifically regarding reactions we probably elicit an abnormally high percentage of local reactions.

Clinical Notes, Suggestions and New Instruments

ACUTE SORE THROATS FOLLOWING EXPOSURE TO SELENIUM

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M D ELLIS, A M, COLUMBIA MO

Certain symptoms in man following exposure to selenium have been reported, such as pallor, coated tongue, gastrointestinal disorders, nervousness and garlicky odor of the breath,¹ but no mention has been found of acute sore throat. Hofmeister² found that selenium was eliminated from the body by the lungs, urine and feces in the form of a methyl compound (methyl selenide) which is volatile and gives rise to a disagreeable odor resembling garlic. Acute sore throats have been repeatedly observed in this laboratory following exposure to selenium, especially in the form eliminated from experimental animals through the lungs.

One of us (H L M) had three very definite attacks of sore throat following exposure, another (M M E) had two attacks and the other (M D E) had two attacks. In the case of the latter the attacks were milder than in the first two. The laboratory technician had two attacks of sore throat. The technician was entirely unaware of the condition that had developed in the rest of us or of the nature of the material used and almost a month had elapsed after the last selenium experiment when he chanced to remark that he was glad that we were not working with "the other stuff" (selenium) for it made his throat sore. On questioning he described two clear cut attacks of sore throat following contact with dogs injected with selenium.

The acute attacks of sore throat extended over a period of three or four days and were followed by involvement of the bronchi, resulting in a mild bronchitis which persisted in mild

From the Department of Physiology and Pharmacology, University of Missouri Medical School.
1 Dudley H C. *Am J Hyg* 23: 181 (Jan.), 1936.
2 Hofmeister. *Arch Exper Path u Pharmacol* 33: 193, 1934.

form from one to two weeks. The sore throat was slightly different in nature from an ordinary one, being more irritating, painful and prolonged over the usual time of the acute stage of a pharyngitis in connection with an infection of the upper respiratory tract. Excessive amounts of secretions formed in the posterior pharynx, necessitating an undue amount of spitting. Although the initial watery discharging stage from the nose was shorter than with an ordinary cold, the amount of material raised from the posterior pharynx and bronchi was much increased. Coughing persisted from one to two weeks, gradually decreasing in intensity. There were no pleuritic pains in the chest. In most respects the attack was similar to an ordinary infection of the upper respiratory tract, the outstanding exception being the dogged persistence with which the involvement hung on. The material raised from the bronchi in general was not as foul as that seen in an ordinary bronchitis. All except one of the acute attacks of sore throat followed exposure to the expired air of dogs carrying selenium in organic combination, and this air was exhaled constantly into a small room for periods as long as from three to four hours after intravenous or intraperitoneal injection of sodium selenite. The garlicky odor was quite apparent and easily detected on entering the room where the selenium injected animal was breathing, even though only a small amount had been used.

One of us (H. L. M.) had a very severe attack, almost if not allergic, judging by the speed with which the reaction occurred following the weighing of some sodium selenite. About two and one-half hours after exposure the soreness of the throat was first noticed, and it became progressively worse during the afternoon and reached a maximal intensity some nine hours later. Excessive secretions were noticed after four hours and continued to increase in amount for some twelve to fifteen hours. For a period of about five hours almost continuous spitting was necessary to keep from swallowing the material accumulating in the posterior pharynx. The fluid was not very viscous, being somewhat frothy and foamy. There was some reflex salivation from the marked irritation of the throat. The soreness of the throat lasted for five days and was accompanied after the first day by some running of the nose of a clear watery fluid, which became thicker on the second day and diminished in amount. However, the amount of material raised by coughing continued to increase for four days, being greatest in amount in the morning. The material was not foul smelling and at first was fairly clear, becoming grayish in appearance after the second day. The cold and bronchitis persisted for one full week in rather severe form, slowly subsiding over another period of two weeks before the cough was entirely gone.

All the ill effects were noted when the subjects were exposed to dogs exhaling methyl selenide or selenium in some other organic combination, with the one exception occurring when one member weighed some sodium selenite, this individual having apparently developed a hypersensitivity to the compound. The results obtained on dogs³ correspond to the pulmonary and excessive secretions observed in man. Selenium did not stimulate the secretory activity of the salivary glands in dogs, however, the development of pulmonary edema was a regular occurrence in dogs with marked accumulations of fluid in the lungs, and the trachea became filled with a frothy foamy material with a strong garlicky odor of selenium in organic combination. The secretory epithelium of the turbinates was very active, as shown by histologic sections. A concentration of the dog's blood occurred, as shown by the hemoglobin rise and the increase in red blood cells following selenium injections, either intravenous or intraperitoneal. In the dog, death results from pulmonary edema. Extensive studies on some of the lower forms of the vertebrates, particularly the fishes,⁴ revealed wide upsets in permeability of the tissues, with excessive accumulation of fluid in certain organs.

The subjects of this report are not accustomed to infection of the upper respiratory tract at this season of the year (April,

May and June), especially the occurrence in rapid succession of repeated attacks. Most of the experiments on dogs were performed at this time and the subjects were exposed to the dog's expired air in a small room with poor ventilation. Previously injections of large numbers of rats with sodium selenite had been carried out without any ill effects for over five months, and some of the injections were made every other day. The garlicky odor could be detected in the rat colony, although not nearly as strong as with the experiments on dogs, and the length of exposure was much shorter each time. Since the exposure to organic selenium in the expired air was stopped, no further attacks of sore throat have occurred.

The first occurrences of sore throats were discounted as being due to exposure to selenium, although at the time it was noted that the condition was an unusual one and that the irritation resulted without any known cause. However, with later developments the authors were forced to admit the suggestive correlations and the association of the sore throats and colds with exposure to selenium. The nature of the condition, whether a weakening of the resistance of the posterior pharyngeal wall or a direct action of the compound on the tissue, was not determined.

Although this is a very small series of cases, the results seem clear cut enough to warrant further investigation, particularly the public health aspect in those areas in which selenium occurs in the soil in amounts which may not be large enough to produce immediate toxic symptoms but may result in a general lowering of the body resistance toward respiratory and pulmonary infections. Certainly laboratory workers should take precautions against breathing air containing selenium in combination with organic compounds when working with experimental animals and should use great care in handling selenium compounds.

116 McAlester Hall

Special Clinical Article

MODERN TRENDS IN THE TREATMENT OF CANCER OF THE RECTUM AND RECTOSIGMOID

CLINICAL LECTURE AT ATLANTIC CITY SESSION

FRED W. RANKIN, M.D., Sc.D.

LEXINGTON, KY

Since January 1927 I have operated on 578 patients for cancer of the rectum and rectosigmoid. This group, on whom many different types of operation have been done—radical, exploratory and palliative—serve as a background for some conclusions as to the merits of different surgical procedures and their accompanying mortality, morbidity and applicability. At the same time, my experience permits emphasis of conclusions which seem to have been relatively well established during the past ten years and allows me to debate with my colleagues on some of the principles of surgery of the lower gastro-intestinal tract.

It is usual in any field of surgery in which continued and progressive advance is made that experience shows many methods to be useless, many to be useful and a few to be essential as gaged by the test of time, and in this respect the progress of surgical treatment for cancer of the rectum—alone or in combination with irradiation—has been no exception.

Several trends which seem to have been established in recent years with more firmness than is customary for the usual procedure have been evident to surgeons interested in this type of work. The more important

Read in the Surgical Division of the General Scientific Meetings at the Eighty-Eighth Annual Session of the American Medical Association, Atlantic City, N. J., June 8, 1937.

³ Ellis, M. M., Motley, H. L. and Ellis, M. D. Data to be published, 1937.

⁴ Ellis, M. M., Motley, H. L., Ellis, M. D. and Jones, R. O. Proc. Soc. Exper. Biol. & Med. **34**: 519 (May) 1937.

of these are, first, a tendency on the part of more experienced surgeons to employ radical operative measures, namely the one and two stage combined abdominoperineal resection or perineo-abdominal resection, in a larger group of cases, second, the recognition that an important factor in successful treatment of rectal cancer is group management, with adequate pre-operative preparatory rehabilitation and decompression plus teamwork during the operative maneuver and scrupulous, personal postoperative care, and, third, the revival of local destruction of the growth by a new agent, namely, surgical diathermy.

That one could expect more radical surgical procedures to result from prolonged experience and study of postoperative statistical data is but natural, for while it is apparent that no one maneuver is applicable in all cases it seems evident that in the hands of men of mature experience the widest extirpation is bound to be the choice. Obviously, as in the case of cancer of the breast, lip and other regions, the essential principles of radical removal of the offending growth, with block dissection of the gland-bearing tissues in juxtaposition to it, should yield the highest number of cures over a period of years. Nevertheless, no armamentarium against cancer is complete without multiple types of operation alone or in conjunction with other agents, and when one is dealing with cancer of the rectum it is strikingly evident that such factors as age, coexisting debilitating diseases and general undermining of the physical equilibrium demand even a wider selection of methods than is ordinarily essential in the surgical treatment of malignant growths.

The acceptance of group management with preoperative hospitalization during the rehabilitation and decompression by medical or surgical measures is now almost universal and has proved its worth beyond any peradventure. It is highly improbable that the more radical operations for cancer of the rectum or rectosigmoid will ever become routine except in the hands of experienced surgeons for the very reason that they demand cooperation and teamwork before and after the operation more imperatively than most other types of surgical procedure. A radical and dangerous operative maneuver can be accomplished only by meticulous care in which each member of the team cooperates during all the phases, and such teamwork is the result of long association, earnest effort and openmindedness toward any development.

Many factors have combined to furnish a better understanding of rectal and rectosigmoidal cancer, including not only the problems of treatment but an appreciation of symptoms which ultimately may result in an earlier diagnosis. The diagnosis of cancer of the rectum and rectosigmoid can be made in 100 per cent of the cases provided a careful digital examination or proctoscopic examination, or both, is made as a matter of routine. There is no difficulty in recognizing a single ulcerating lesion of the rectum as a malignant growth in the vast majority of cases. Such a lesion can easily be felt with the index finger if the patient, in the knee-chest position, strains against the examining finger and pushes the growth downward. Rectosigmoidal growths frequently are at too high a level to be felt digitally, but a proctoscopic examination makes possible an accurate diagnosis in every case. There is no difficulty in recognizing the lesion under actual inspection, but biopsy may be done regularly or in cases in which there is a question of the pathologic diagnosis.

One purposefully emphasizes examination of rectal and rectosigmoidal growths in discussing diagnosis rather than symptoms, for there are unfortunately no early pathognomonic symptoms. True, 90 per cent of cancers in this location will at some time during their existence be the cause of blood in the stool or on the stool, and in a large number of cases this will be the first symptom for which the patient seeks advice, but blood in the stool or on the stool means that the cancer has advanced until ulceration has invaded blood vessels and consequently has existed for a considerable period. Perhaps irregularity of the bowel habit is characterized by diarrhea or constipation or alternating periods of the two over a short time, e g, a month or six weeks, is the most characteristic symptom. With this as a danger signal, one should therefore investigate such irregularity in stool habit both proctoscopically and radiologically.

I emphasize the sequence of examinations of the bowel—the proctoscopy on a properly prepared bowel should always precede radiologic examination. Indeed, a growth anywhere within 25 cm of the anal margin can always be diagnosed by proctoscopy, and direct visual examination is infinitely preferable to radiography. However, if the result of proctoscopic examination is negative, x-ray investigation is urgently indicated.

Pain in cancer of the rectum, unfortunately, is late in occurring, is untrustworthy when present and frequently is no index to the age or size of the growth. Until the neoplasm has advanced beyond the local confines or fastened itself to some viscera or nerve trunks, where its existence calls attention to it, pain is usually absent. Irritation of the rectal sphincter, with sacral backache and shooting pains down the hips, is not uncommonly found either with epithelioma of the anal canal or secondary to metastases.

PATHOLOGY

Practically all rectal cancers are adenocarcinomas except those occurring in the anal canal, which are usually squamous cell epitheliomas. Beginning in the submucous and mucous coats of the bowel, they extend intraluminarily or occur as sessile tumors or ulcers which grow toward the peritoneal coat. It is well recognized that extension into the lumen usually is more satisfactory from the standpoint of prognosis than extension toward the peritoneal coat and that usually the papillary or adenomatous varieties of rectal cancer are of lower malignancy than the sessile or ulcerating type.

A third type of pathologic process—the colloidal variety—is seen in about 5 per cent of rectal and colonic cancers. The colloid, which appears grossly as a kind of gelatinous material surrounding the growth and the microscopic picture of which is recognized by the characteristic "signet cells," is probably a defense mechanism. Certainly it is true that colloidal cancers have a satisfactory prognosis but tend to recur ultimately more surely than the average adenocarcinoma.

A knowledge of the type of pathologic process with which one is dealing is important from the standpoint of both prognosis and treatment. While it is uniformly felt that the higher grade tumors are radio-sensitive and less amenable to surgical treatment, it is definitely known that there are many exceptions to this rule. In order to grade the tumor rather than as a diagnostic measure, I have regularly done a biopsy on all rectal and rectosigmoidal cancers for twelve years. As for

any tendency to scatter cancer cells by this biopsy, failure to observe such a tendency has been the rule according to my experience

Having demonstrated in a young patient a high grade growth, I feel that it is frequently advantageous to test the radiosensitivity by an actual application. Perhaps it is for this type of growth that the future will reveal radium alone or in combination with surgical treatment to have its most advantageous use.

The colloidal group of cancers, while notoriously prone to recur after surgical removal, are fairly well established as radiosensitive tumors. Certainly, a knowledge of the type of pathologic process with which one is dealing and the intensity of its activity is desirable before one institutes any type of treatment.

RADIUM

Unquestionably, accumulated data show conclusively that in certain cases cancer of the rectum can be cured by radium and that the number of these cases is slowly increasing. The two great difficulties in connection with the use of radium for these tumors are, first, the inaccessibility of the tumors, 67 per cent of them being at the rectosigmoid juncture, and, second, the lack of knowledge as to which tumor is radio-sensitive. Epitheliomas of the anal canal are better treated by radium than by surgical procedures, but as one advances toward the rectosigmoid, the latter becomes the choice of treatment.

Gordon-Watson, Gabriel, Bowing and others who have had the most experience in the use of radium are unanimous in the opinion that it has a place in the treatment of cancer of the rectum but that the field is a limited one. Its greatest value is as a palliative procedure for inoperable and recurring lesions. With its use bleeding is frequently controlled, the tumor frequently recedes enormously and occasionally so-called inoperable tumors are rendered removable.

Preoperative use of radium, while advocated by some surgeons, is still a most uncertain agent, and more data are necessary relative to its action before it is accepted as a routine. One quite agrees with Sir Charles Gordon-Watson that "in the near future rectal irradiation may be so regulated as to offer as high a percentage of cures, in early cases, as by operation and with less risk, and in a certain number without the inconvenience of colostomy," but such views are the result of a hope that equally good results without the mutilation of radical operation may follow its use rather than of a conviction from past experience that this will be the case.

SURGICAL DIATHERMY

Another recent trend has been the application of surgical diathermy as a method of treating cancer of the rectum. Recently, Strauss and his associates reported a number of cases in which the patient was treated over a period of years by this method, and they are enthusiastic over the end results. Careful scrutiny of their series emphasizes not only that colostomy was necessary in one half of the cases but that the mortality figures approach those for patients presenting the less formidable variety of surgical risks who are treated by resection.

The limitation of diathermy for cancer of the rectum is also emphasized by these workers, namely, that it is not a satisfactory method to apply to rectosigmoidal malignant growths because of the liability of rupture into the peritoneal cavity. This contraction of the scope of applicability plus a normal mortality rate

and the necessity of colostomy, the avoidance of which is the major argument against surgical procedures by many surgeons and the public, seems to me definitely to eliminate this method as a regular treatment for rectal cancer, leaving it among the agencies applicable to a small selected group probably presenting bad risks and having low-lying obstructing growths. Fansler has suggested its utility as a palliative procedure calling attention to the fact that once the obstruction is relieved the patient does regain health rapidly and the growth is favorably influenced.

I cannot help feeling that any type of local destruction of a cancer which does not remove the regional glands as well is open to rather pointed criticism for the very good reason that 46 per cent of all rectal cancers have metastasized to the glands when the patient comes to operation. I would not condemn this method without having some experience with it but have no hesitation in placing it in the category of operations which are applicable to a limited group of cases, and I distinctly disagree that avoidance of a colostomy is a scientific reason for selecting any method of therapy. Furthermore, the method requires special apparatus and certainly extreme care in its application. When it is used as a curative measure, the growth should be completely destroyed (and this is not possible without proper speculums and exposure) and the coagulation carried out thoroughly.

In the past year I have seen two patients who had been incompletely treated by electrocoagulation, in neither of whom complete destruction of the growth had taken place and in neither of whom did even palliation result. If the procedure is carried out incompletely and without proper selection of cases, certainly its establishment as a useful agent in combating cancer of the rectum will not be forwarded.

SELECTION OF OPERATION

That the surgeon who operates on cancers of the rectum must be familiar with a number of operative maneuvers is axiomatic if the extension of the operability curve is to be forwarded consonant with a reasonable hospital casualty list. The majority of cancers of the rectum are cancers of the rectosigmoid, and because of the inaccessibility of this part of the bowel "just too low to attack from above and too high to attack from below," the operations of Miles, Jones, Rankin, Mummery and others, or some of their modifications, are useful in ratio to their individual applicability.

That successful surgical maneuvers yield eminently satisfactory results in treatment of cancer of the rectum and rectosigmoid if radically applied when the growth is in a relatively early stage is incontrovertible. The question of the type of operation cannot be answered so easily. Many considerations, particularly the condition of the patient and the stage of the growth, make it important that attempt by a single standardized procedure is not undertaken but that there are available at least four types of operation. These are, in the order of desirability but not necessarily of applicability, in my hands first, radical combined abdominoperineal resection in one stage, second, radical combined abdominoperineal resection in two stages, third, colostomy and posterior resection, and, fourth, palliative procedures and local excision.

One of the fundamental factors when one is deciding on an operative procedure is the acceptance of colostomy as a part of the procedure. It is a happy reflection that there is less and less opposition by members of the

medical profession to colostomy. One regrets that the development of radical surgical procedures against rectal cancer has been retarded by an unfortunate attitude on the part of surgeons as well as the public toward accepting an uncontrollable anus as a portion of the plan. Just why colostomy should have had the stigma cast on it that has been its lot is not clear to me, for really it is rather a state of mind than an actual infirmity which makes its acceptance most reluctant. Nevertheless, despite certain other trends toward the application of radical measures in the treatment of cancer of the rectum, the vast majority of members of the medical profession, and certainly most surgeons experienced in this line, accept without question the necessity of a preliminary or complementary colostomy. That anything short of a radical extirpation of the gland-bearing tissues adjacent to the growth fails to cure a large percentage of the patients is logical when one reflects that nearly one half of the excised specimens of rectal cancers show glandular involvement. When local measures of necessity must be applied because of the inability of the patient to stand radical operation, surgical judgment is reflected in the selection of a less formidable procedure.

One admits that radical surgical maneuvers on the rectum are mutilating and that the sacrifice of nature's magnificent sphincteric mechanism is unfortunate, but in a campaign against cancer such considerations are negligible if by accepting facts one can demonstrate a most hopeful prognosis. I have no experience with and small interest in operations which leave a sacral anus. I feel that it is a distinct disadvantage that the removal of the mesentery of the sigmoid cannot be done if one makes a posterior resection with a sacral anus and, furthermore, that partial control and daily care of the opening are much more easily accomplished if it is anterior and under inspection.

To place the opening either in the left groin or in the midline wound or to remove the umbilicus and leave it in this hiatus is a matter of individual choice. My own preference is to bring the end of the bowel out through a stab wound in the groin. The two factors that make an artificial anus comfortable are to have a small opening through which the bowel emerges

TABLE 1—*Cancer of the Rectum and Rectosigmoid Mortality and Operability*

576 cases	}	Operability, 71.4%
412 resections		
576 cases	}	Mortality 13%
75 deaths		
412 resections	}	Mortality, 11.8%
49 deaths		
104 exploration alone or with colostomy	}	Mortality 15.8%
26 deaths		

and thus prevent prolapse and herniation, and to have it properly placed. Any artificial anus properly made is readily taken care of and is not an intolerable companion, nor does it condemn its host to social ostracism or professional inaction.

In the selection of type of operation for cancer of the rectum and rectosigmoid, the choice lies largely between a combined abdominoperineal operation in one or two stages and the Mummery operation of colostomy and posterior resection.

While I am convinced that it is desirable to do as radical an operation in all cases as is possible—that is, as is compatible with a reasonable mortality—I am likewise convinced that there is a place for the radical

two stage combined abdominoperineal operation as well as for the less radical colostomy and posterior resection. Certain patients who are bad risks can be operated on radically in two stages when a one stage operation would be too formidable a task. For patients over 63 or 65 years of age, the one stage operation is applicable at a considerably higher hazard than the two stage operation.

I am entirely in accord with Dr. Daniel Fiske Jones of Boston, who has done more perhaps than any other man in America to advance surgery of the rectum, in

TABLE 2—*Cancer of the Rectosigmoid and Rectum Mortality for Different Operations*

	Cases	Deaths	Mortality
Combined stage abdominoperineal resection 1	44	2	4.5%
Combined stages abdominoperineal resection, 2	89	8	8.9%
Colostomy and posterior resection	133	10	7.5%
Miscellaneous anterior resection tube re section Harrison Cripps operation local excision etc	162	12	7.4%
	117	27	23%

his statement "I have gradually increased the number of one stage operations and decreased the number of two stage operations, and believe that this should be done as men find their ability to do the one stage operation increasing. I still feel that there are a few cases which I want to do and which are not fit for a one stage operation." Likewise, I believe that about 25 per cent of all patients that are still operable as they appear for surgical treatment will of necessity, because of the gravity of the risk to them, be operated on by Mummery's operation of colostomy and posterior resection or by some two stage radical operation such as Jones's or my own.

With a decided preference for Miles's operation, and employing it as I do wherever I deem it possible, I still find an occasional use for my own operation and more than occasional indication for Mummery's. The important necessity of fitting the operation to the patient—individualization of cases—must never be overlooked.

OPERABILITY AND MORTALITY

Table 1 indicates the mortality and operability curves. It will be observed that the gross mortality was 13 per cent including all types of operation, both resections and palliative types, but this was accompanied by an operability of 71.4 per cent. It is interesting to note that for the 412 resections there was a gross mortality of 11.8 per cent, or a smaller hospital death figure than that for the entire group.

Table 2 indicates the mortality figures for the different types of operation. In the series of forty-four combined abdominoperineal resections done by Miles's technic, there were two deaths. Thus, I feel, is too low a figure to be hoped for in a larger series, but I think it does demonstrate that familiarity with the technic and attention to other details permit one to employ this type of procedure with a satisfactory mortality.

It will be seen that the mortality rate for the combined abdominoperineal operations in one and two stages—133 cases with ten deaths—was 7.5 per cent, as compared with 162 cases with twelve deaths, or 7.4 per cent, for colostomy and posterior resection. The last figure is higher than is customary for surgeons using the colostomy and posterior resection regularly, 5 per cent being about the average. This is explained, how-

ever, by the higher operability curve and the fact that the patients presenting the worst risks who were submitted to resection of any type were operated on by this variety of procedure

It seems obvious from these statistics that the often repeated statement that "no one type of operative procedure is applicable in all cases of cancer of the rectum" is again demonstrated and, furthermore, that when patients present better risks and the surgeon desires to extend the scope of the more radical procedure, it is possible to accomplish combined abdominoperineal resection in one or two stages with a mortality and operability comparable to that for other similarly radical operative procedures for cancer elsewhere in the gastro-intestinal tract

The percentage of operability in any study is just as important as is the hospital death list. Operability is in direct ratio to mortality, and the higher the operability the higher the mortality. Statistical data on end results following operation prove indubitably that a larger number of patients actually do well under the aforementioned scheme than by a closer selection of cases, which gives a low mortality rate but refuses operation to a larger group.

It is difficult to fix inflexible standards of operability because of the individual equation not only in the patient but in the surgeon himself. It seems a reasonable standard of operability to subject to resection all patients in whom the local conditions do not, because of fixation to adjacent viscera or abdominal parietes, render the growth utterly immobile and in whom hepatic metastases are not demonstrable. To this rule I would submit a modification, namely, that there are a few cases in which carcinomatous nodules are palpable in the liver in which, because of the ease of removal of the growth and the ability of the surgeon to remove it with a minimal operative mortality, the growth should be resected, since death due to hepatic conditions is much easier than death due to obstruction and infiltration, which go with an unremoved gastro-intestinal cancer.

Again let me emphasize that in borderline cases the patient should be subjected to resection even at the risk of some elevation of mortality statistics, for until more definite knowledge of other therapeutic agents is developed, surgical extirpation accomplished radically remains the hope of sufferers from cancer in the rectum.

CONCLUSIONS

During the past five years I have found it advantageous in my own practice to make some changes in the treatment of rectal cancer. They are as follows:

- 1 Acceptance of the principle that the most radical type of operation should be applied in all cases in which judgment indicates that such a procedure may be done with a reasonable hospital death list.

- 2 The exertion of every effort to increase the scope of operability to the point of taking in all borderline cases. Other things being equal, I think that only hepatic metastasis and immovable fixation to the parietes or adjacent viscera should eliminate attempts at extirpation. This rule should be modified further in a certain percentage of cases by acceptance for palliative resection of a small group of movable tumors which have already metastasized to the liver.

- 3 Abandonment of spinal anesthesia.

- 4 Employment as a routine of postoperative transfusions and, in cases in which anemia and great debility exist, preoperative transfusions as well.

- 5 Extension of the preliminary preparatory period to at least seven days and insistence that decompression be complete whether it is accomplished by medical measures or by surgical procedure. If on exploration the preliminary measures are found not to have been successful in reducing the obstruction and eliminating a great deal of local infection, it is desirable to do immediately a graded operation, the first step of which usually is a cecostomy.

- 6 The abandonment of the preoperative intraperitoneal vaccination. I do this regretfully, but a study of my private cases the last five years, in which vaccination was not done, in comparison with those which I reported for a previous six year period, makes it impossible for me to escape the conclusion that vaccination is not the large factor in reducing mortality that I thought it to be.

- 7 The employment of presacral neurectomy as a routine in the hope of lessening complications in the bladder. However, it must be admitted that this procedure has failed to achieve as brilliant results as were hoped for.

A statistical study of end results, particularly of the more radical procedures, warrants the assertion that according to the present state of knowledge the choice of treatment for rectal cancer is operation. With an increasing operability curve and a lower mortality rate, this treatment of rectal and rectosigmoidal cancer is rewarded by as favorable a prognosis as that for cancer of the same intensity elsewhere in the body.

410 Security Trust Building

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION
OF THE FOLLOWING REPORTS HOWARD A. CARTER, Secretary

SLEEPWELL GOLDEN FLOSS PILLOWS NOT ACCEPTABLE

Manufacturer: Golden Floss Pillow Company, 1216 Harney Street, Omaha

The Sleepwell Pillow is recommended by the company as a "non-allergic" pillow for use by those predisposed to hay fever, asthma, sinus or various allergic skin reactions. The stuffing of the pillows consists of cat tail bloom. According to the firm, "Golden Floss" contains no basic ingredients that can produce irritants to the aforementioned allergic conditions. The filling is not medicated but is guaranteed to be "non-allergic," that is, free from irritating dust. It contains, according to the firm, no cotton, kapok, hair, feathers, wool or down.

The Council appointed an investigator to investigate the two pillows "Sleepwell" and "Golden Floss" and also a bottle of serum for testing allergic reactions. From the character of the material used as filling, seedlike particles, the investigator reported that it was potentially allergenic. He used the extract prepared from this material by the firm to test reactions on a series of patients. They failed to react to the serum.

The investigator made it clear that because a substance fails to react in a number of patients the test does not signify that the substance is free from allergenic irritants. In the case of the material under discussion, he believed that the patients who had come to his attention were not sensitized to cat-tail bloom because they had had no direct contact with it. In his opinion, if such contact is continued, as it would be in the use of the pillows, allergic individuals would become sensitive to it just the same as some allergic individuals became sensitive to kapok when it was substituted for feathers.

A pertinent decision of the Advisory Committee on Advertising of Cosmetics and Soaps may well be included here with

regard to the use of the term "non-allergic" "1 The committee is unable to accept any statement to the effect that a product is nonallergic, allergin free or synthetic nonallergic, because even the simplest preparation may be allergic to a susceptible person

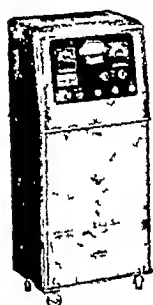
Beginning with July 1, 1937, the term 'nonallergic' shall not appear in the name or description of any cosmetic preparation unless an asterisk appears opposite the word 'nonallergic' accompanied by a suitable notation explaining the limitations of the term" The Council on Physical Therapy voted to impose similar restrictions on the use of the term "non-allergic"

In view of the unfavorable report the Council on Physical Therapy voted the Sleepwell Golden Floss Pillow not acceptable for inclusion in the list of accepted devices

ROSE CW JUNIOR RADIOTHERMY UNIT ACCEPTABLE

Manufacturer E J Rose Mfg Company, Los Angeles

The Rose CW Junior Radiothermy unit is a portable machine designed for medical and surgical use. It comes in a black leatherette carrying case with bakelite panel and metal chassis, weighing approximately 40 pounds. Terminals are supplied for the conventional pad type of electrodes and for electrosurgical instruments, the latter for coagulating, cutting and desiccating purposes.



Rose CW Junior Radiothermy

The CW Junior comprises a tuned plate, tuned grid, push-pull oscillating circuit employing two tubes of a manufacturer's rating of 170 watts maximum attainable plate power output each, and a patient circuit inductively coupled to the oscillator with a variable condenser incorporated in the circuit for tuning purposes. The wavelength is approximately 16 meters.

The input power required to operate the unit at full load is 600 watts. Since no acceptable means has been devised for true measurement of the output in terms of watts, no claims for such are made.

However, a phantom load test by means of electric light bulbs connected through condenser pick-up plates and arranged to activate a photo-electric cell and calibrated meter approximates 275 watts.

The transformer temperature rise and the rise inside the cabinet taken at various levels are within the limits of safety prescribed by the Council. Burns may occur when this unit is being used but are less likely to occur than with conventional diathermy and may be avoided by the use of ordinary precautions.

The firm submitted tests on the heating efficacy of the unit when applied to the living human thigh. Four healthy male medical students were

in the anterior part of the thigh at depths of one eighth inch, three-fourths inch and 2 inches or on the bone. These depths were measured from the skin straight in, that is, normal to the skin surface. The averages for eight observations with the cuff technic are given in the table.

Averages of Eight Observations, Cuff Technic

Deep Muscle		Subcutaneous		Skin		Oral	
Initial	Final	Initial	Final	Initial	Final	Initial	Final
90.3	102.4	98.0	102.4	93.2	99.9	9.3	98.8

The unit was tried out in actual clinical practice by an investigator for the Council and found to give satisfactory service.

In view of the foregoing report, the Council on Physical Therapy voted to include the Rose CW Junior Radiothermy Unit in its list of accepted devices.

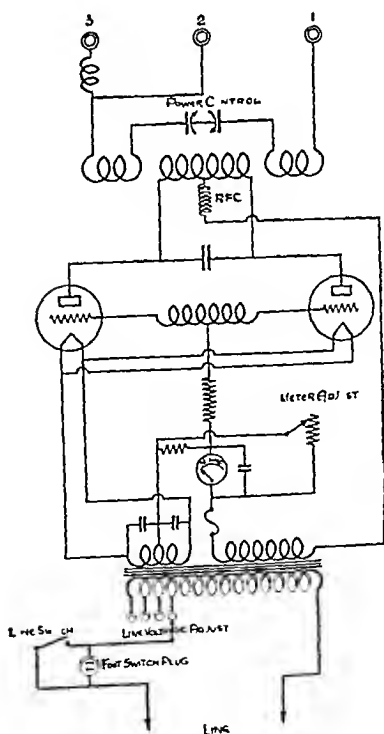
Special Article from the American Medical Association Chemical Laboratory

THE FOLLOWING REPORT IS ISSUED UNDER THE AUSPICES OF THE
A M A CHEMICAL LABORATORY PAUL NICHOLAS LEECH, Director
A M A Chemical Laboratory

ELIXIR OF SULFANILAMIDE- MASSENGILL II

The report on the Elixir of Sulfanilamide-Massengill episode published in the November 6 issue of *THE JOURNAL*, pages 1531-1539, contained a survey map of the deaths to October 29. Herewith the survey map is brought down to date. This shows that there have been seventy-three deaths reported to November 11. As may be seen, all but a few of the reported deaths have been from the Southern states. It is emphasized that the additional deaths reported are not recent but have only recently been reported as having followed the administration of Elixir of Sulfanilamide-Massengill. That no recent deaths have occurred shows the effect of the wide publicity initiated by *THE JOURNAL* and the excellent work of the government in removing the product from the market.

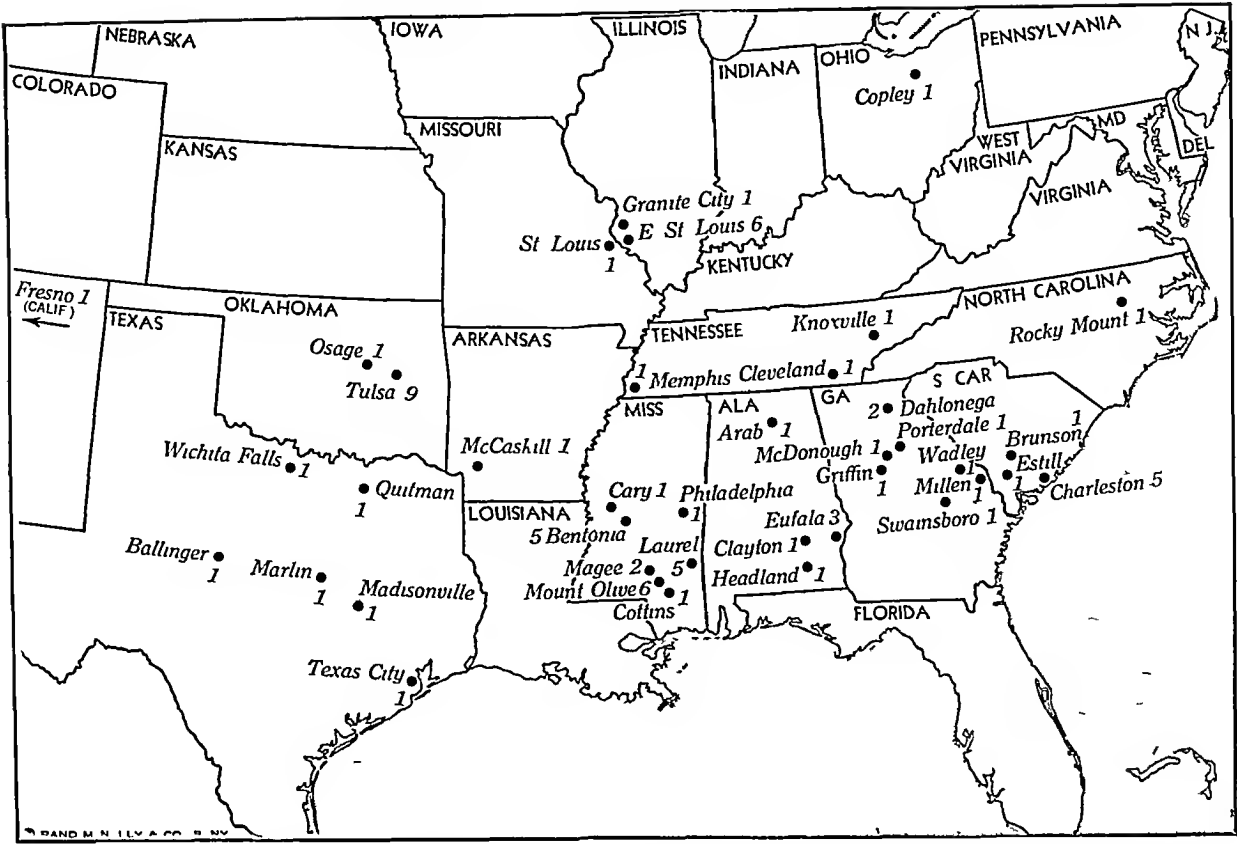
In reports appearing in the newspapers and elsewhere there has been considerable confusion, many of the deaths have been attributed to sulfanilamide, which was not the causative factor. As pointed out previously, the diethylene glycol used in the solvent was the harmful agent. There has been further confusion between the various sulfanilamide derivatives, their properties and names, and the chemical difference between ethylene glycol and diethylene glycol. For the information of physicians there is reproduced herewith a chart, modified from that shown at the last annual session of the American Medical Association with reference to sulfanilamide and its related compounds. Also reproduced is another chart showing the structural interrelationship between ethylene glycol (used in solution as a solvent and an ingredient for antifreeze solutions), diethylene glycol (also a solvent), and dioxane (to which references have been made in toxicity studies). Only diethylene glycol was found in the Elixir of Sulfanilamide-Massengill.



Schematic diagram of circuit.

the subjects. Two tests were run on each making eight observations in all. Temperature measurements were taken with the usual thermocouple technic, a thermocouple being placed

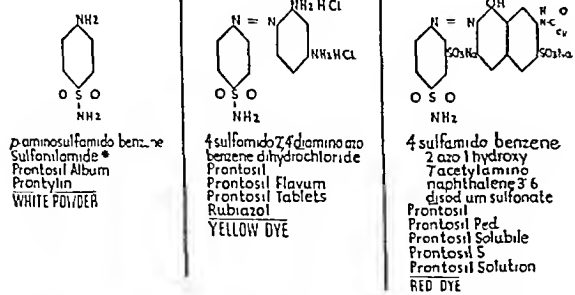
Reported Deaths from Elixir of Sulfanilamide-Massengill



To the best of our knowledge this map shows the deaths confirmed by telephone telegraph or other authoritative communication resulting from the administration of Elixir of Sulfanilamide Massengill up to and including November 11 no responsibility however is assumed for its absolute correctness The city names indicate the residence address or place of death of the victim or the address of the attending physician

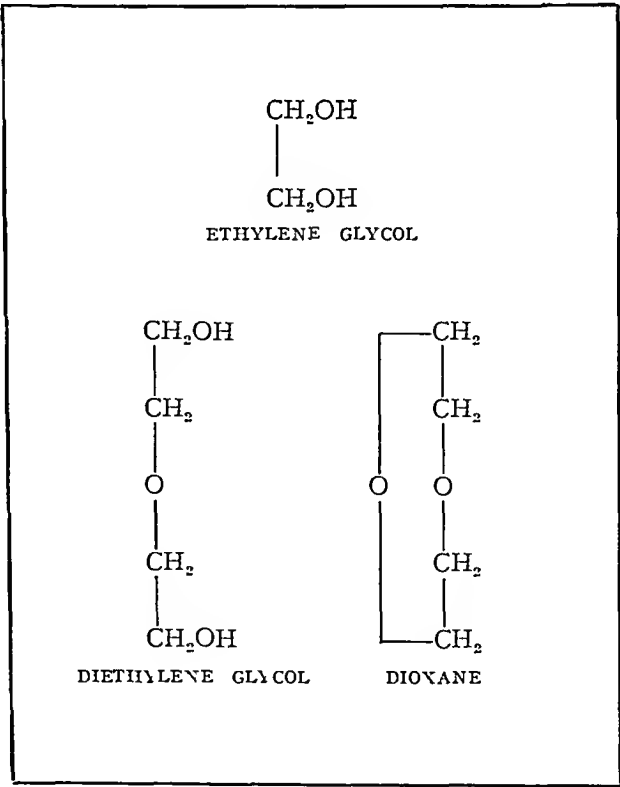
A SPECIFIC IN BACTERIAL INFECTION

Chemotherapeutic agents that are active against certain gram negative cocci have been discovered The implications of the discovery are far-reaching Compounds showing activity have the following formulas and the following names have been appended to them in the literature



The confusion in the nomenclature is unfortunate. The pharmacodynamics of the compounds are still unknown. Administration is not without immediate danger and the later effects if any are unknown. Further developments will follow

*Accepted by the Council on Pharmacy and Chemistry



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SATURDAY, NOVEMBER 20, 1937

POPULATION—SUPPLY AND DEMAND

In an editorial¹ entitled "Headed for the Last Census?" published last week it was pointed out that, if the fertility in most countries continues to show the same rate of decrease now evident, a definite loss of population will occur in from approximately five to fifty years. Even though it is not at all certain that this tendency will continue, the possibility must be apprehended. As far as it affects the health and socio-economic life of the country at that time, it should be seriously considered. The Proceedings of the World Population Conference in 1927² and the publications of the Scripps Foundation have already done much to indicate the lines along which further studies should be made.

Burch,³ in the second of two articles on the subject, has reiterated one factor which, if it continues, should be of grave importance in connection with the whole problem. With the psychologic intelligence test as a measure of intelligence, it has been found that, regardless of whether the study involves economic, social, cultural, occupational, educational, intellectual, rural or urban groups in this country, the lower intelligence strata in each group have the largest families and the higher strata the smallest. Although the hereditary transmission of intelligence in some instances seems to follow definite patterns, it does not always do so. While this is alarming at first glance, nature in greater wisdom, possibly, takes this method of restoring some other element which must be constantly replaced. These possibilities, however, are largely speculative, the greater mass of evidence indicates that it is unfortunate that the higher intelligence groups do not replace themselves to at least as great an extent as those of lower intelligence. What effect, however, this fact will have on the future of the country can be only partially imagined.

Numerous effects of the declining birth rate have been pointed out. Thomas⁴ states that a declining population would increase rather than ameliorate unemployment and would make recovery from any future economic depression more difficult. It would be particularly noticeable in the demand for certain capital goods, such as houses, and, with the adaptation of industry to mass production, the shrinking of markets due to falling numbers might necessitate radical revision of methods.

Another effect of the declining birth rate would be alteration of the age composition of the population. In England, according to Thomas, children under 14 form today 23 per cent of the population, with 64 per cent between the ages of 15 and 60, and 13 per cent over 60. If present rates hold for sixty years, only 4 per cent of the population will be under 15, 52 per cent will be workers from 15 to 60, and 44 per cent will be over 60. The effect is already noticeable, according to Martin,⁵ who states that in 1901, 74 per cent of the people were aged 60 and over and in 1931 this percentage had risen to 11.56, an increase of 50 per cent. Accompanying this rising proportion of the elderly, social expenditure will increase, since the burden will have to be borne by a smaller number. There will be an increase, Thomas points out, in invalidity, in the burden of state insurance and in the relative cost of old age benefits. The altered age distribution will necessitate reorientation of the social services with emphasis on accommodation for the aged rather than for the young. Thus there will be less need for child welfare services, hospitals for infectious diseases and schools but an increased demand for accommodation for the senile, the bedridden and the blind. Some of these changes have already become manifest in England, where it is understood that some schools are no longer completely utilized and some of the accommodations for children have passed their maximum employment.

Burch, however, takes issue with some of these conclusions and says that, while probably it is true that there will be an increase in the proportion of persons between 60 and 80, this does not mean that the people in the productive age groups will be overburdened, since there will be a smaller number of dependent children. He says that when the population in this country reaches approximately 150,000,000 at about 1980, there will be fewer dependents as far as age is concerned than at present. This would be true even if persons between the ages of 40 and 65 were considered only half as valuable from a productive standpoint as persons between the ages of 20 and 40. Extreme pessimism, Burch believes, is not justified, since the birth rate in this country need not necessarily follow that of Europe, which is far more densely

¹ Headed for the Last Census? editorial J. A. M. A. 109:1638 (Nov. 13) 1937.

² Proceedings of the World Population Conference. London: Edward Arnold & Co. 1927.

³ Burch, G. J. Headed for the Last Census. Part 2. J. Hered. 28:241 (July) 1937.

⁴ Thomas, E. W. Caryl. Population Problems. J. State Med. 35:514 (Sept.) 1937.

⁵ Martin, W. J. Studies in the Declining Birth Rate. England and Wales. J. Hyg. 37:1-69 (Oct.) 1937.

populated. Thus, although the decrease in population prophesied is far from certain to develop, it is important to physicians, educators, public health officials, legislators and life insurance companies, as well as to industry, to follow with close attention the developments that occur and to attempt with the help of this foresight to avoid unnecessary complications.

DEATHS FOLLOWING ELIXIR OF SULFANILAMIDE-MASSENGILL IV

Seldom has any catastrophe stirred the United States to the extent to which press and public have been aroused by the needless deaths resulting from the Elixir of Sulfanilamide-Massengill. The repercussions have been varied. Unfortunately, many believe that sulfanilamide was the toxic agent. All the work and confirmatory data reported thus far and transmitted to THE JOURNAL show that diethylene glycol was the causative agent. This does not mean that sulfanilamide is a harmless drug, it is potent and should be used only under the close supervision of the physician.

The number of deaths from the elixir that have been reported since the statement published November 6 has increased from sixty-one to seventy-three as of November 11. The increase in the number of reported deaths does not indicate that the patients died recently, it simply means that reports of additional deaths have been confirmed.

In the publicity, much confusion is apparent in the nomenclature of sulfanilamide and its derivatives and also of certain of the glycols. The Chemical Laboratory reproduces elsewhere in this issue¹ charts pointing out the proper nomenclature and giving the chemical structure of the products.

An interesting sidelight on the tragedy is the Massengill house organ issued under date of October 25, in which Elixir of Sulfanilamide-Massengill plus "corrective mixture"² is suggested for the treatment of colitis. Undoubtedly this was printed in advance of October 25, but it shows the readiness with which products are recommended for various conditions apparently without careful laboratory and clinical tests being made as to value or harmlessness.

Another lamentable feature is the manner in which various businesses involving the use of either diethylene glycol or sulfanilamide are being attacked in uninformed editorials or by whispering campaigns set afoot by competitors who do not hesitate to profit from unanticipated misfortune. Clearly these deaths resulted from overdosage of a toxic agent wrongly used. Such an incident bears no relationship to the proper uses of either of the substances concerned.

Under the present Food and Drugs Act or even under any of the food and drug bills now before Congress, there seems to be no provision which would prevent a repetition of this tragedy. Yet the people have

a right to protection against incompetent or unscrupulous manufacturers. Complete disclosure of formulas on the label might be helpful.

The medical profession has been advised for years concerning the status of new drugs by the Council on Pharmacy and Chemistry of the American Medical Association. Recent correspondence indicates that many of the physicians of the United States are fully aware of the value of this service of organized medicine. However, there are many physicians who do not follow closely the reports which are issued almost weekly. Any pharmaceutical house which desires to market its products honestly and in accordance with the rules of the Council may have its products considered. Remuneration is not accepted in any shape or form for the consideration of products by any of the councils of the American Medical Association. The potential value of the advice of the Council on Pharmacy and Chemistry to the medical profession and to the public is manifested by the fact that it did not accept any brand of dinitrophenol or any "elixir" of sulfanilamide.

Current Comment

NEW YORK CITY SCHOOLS USE A M A BROADCASTS

An interesting use of the American Medical Association and National Broadcasting Company dramatized radio health broadcasts is reported from the Board of Education of the City of New York by Dr. I. H. Goldberger, assistant director of health education. New York's junior high schools and a large number of the senior high schools will take part in a study of the value of enriching health knowledge through such broadcasts as these, sponsored by the American Medical Association and the National Broadcasting Company. The schools will be divided into two groups. Group 1 will listen to the weekly broadcasts until the end of the first semester, group 2 will not. Then both groups will be given an examination on the ground covered in the broadcasts. During the second semester the role of the two groups will be reversed, group 2 becoming listeners and group 1 nonlisteners. The two groups will be examined again at the end of the second semester. Since the broadcasts occur during school hours, there will be no likelihood of nonlisteners listening, except in rare instances, and the groups will be large enough to minimize the effect of such uncontrollable variable factors. The comparative showings on these examinations should give at least a general idea of the value of radio dramatizations in health teaching. Such use of the program is exactly what was hoped for and intended when the program was planned and announced. It would be highly desirable if more school systems would participate in the programs in similar manner. This use of the program might with propriety be called to the attention of local school boards and officials by county medical societies and auxiliaries.

¹ This issue p. 1725

PROPOSALS, PRINCIPLES AND PETITIONS

On November 7, newspapers throughout the United States referred either in extenso or briefly to a series of principles and proposals which were signed by 430 physicians, whose names were released to the press. This was widely heralded as a revolt against the American Medical Association, in most instances the headlines declaring it a definite movement in behalf of state medicine. These principles and proposals with the 430 signatures have been sent also to the secretaries and officers of most of the medical societies—large and small—in the United States, urging their adoption. Since that time the headquarters of the Association has been deluged with letters from physicians throughout the country, some protesting the use of their names, others sending the letters by which they refused the use of their names and still others demanding summary action on the part of the Association. The entire matter is being referred to the Board of Trustees of the American Medical Association, which meets in Chicago this week and which will no doubt issue a statement relative to its point of view. In the meantime, members should realize that the policies of the American Medical Association are established by the House of Delegates, which at the Atlantic City session took definite action opposing most of the proposals here offered. Obviously all proposals should come to the American Medical Association in the regular manner through the state associations and the House of Delegates. Individual physicians will do well to consider carefully the ultimate effect of all such plans and proposals before affixing their signatures.

ALCOHOL AND TRICHINOSIS

Generous quantities of alcohol have been advised on theoretical grounds as a prophylactic measure against trichinosis. Pierce and McNaught¹ of the department of pathology at Stanford University School of Medicine have tested the effects of alcohol in vitro on the digestion of *Trichinella*-infected meat. Rats infected three months previously with trichinae of human origin were killed, skinned, eviscerated and passed through a meat chopper, 5 Gm. samples of the resulting infected ground rat meat were placed in beakers and subjected to the action of 100 cc. of artificial gastric juice, from 9 to 23 per cent alcohol was added to half of the beakers, the other half being diluted with equal volumes of distilled water to serve as controls. After six hours' incubation at 37° C. the meat in the alcohol-free samples was completely digested and all trichinosis larvae were set free in the digestate. At this time the samples containing alcohol showed only partial digestion. The digestion was allowed to continue for eighteen hours, after which each sample was strained through a 60 mesh wire sieve. The undigested meat in each sample was discarded and the number of free larvae in each digestate were then counted. In the alcohol-free controls an average count of 12,732 free larvae was obtained. The alcohol-containing digestates, however, gave counts varying from 2,650 to 7,660, the count decreasing with increases in alcohol percentage. From

these data alcohol may interfere with the liberation of the larvae during the process of normal gastric digestion of infected meat, owing presumably to alcohol inhibition or destruction of peptic enzymes. Effects on tryptic enzymes have not yet been determined. In order to test whether or not alcohol has any direct trichinellacidal action, the Stanford experimenters subjected free and demonstrably viable larvae to concentrations of ethyl alcohol ranging from 0.1 to 25 per cent. Death of free larvae is readily demonstrated microscopically. After six hours' contact with the alcohol no trichinellacidal action was demonstrable even when 25 per cent alcohol was used. After twelve hours, however, the larvae exposed to 25 per cent alcohol were all dead, while those exposed to 12.5 per cent alcohol were still viable. By the end of twenty-four hours the larvae were dead in tubes containing over 62.5 per cent alcohol. *Trichinella* larvae, therefore, are surprisingly tolerant to alcohol, resisting concentrations greater than those maintained for any period in the human stomach. Judging from these data the only prophylactic effects that can be attributed to alcohol are the questionable effects resulting from alcoholic paralysis of gastric digestion.

INFECTION OF LOWER GENITAL TRACT IN YOUNG GIRLS

Reichert and his collaborators² have reported the clinical, bacteriologic and sociological data of 121 girls with infections of the lower part of the genital tract studied over a period of five years. In the course of the study 842 endoscopic examinations were made, 264 cultures were studied and more than 2,000 smears were examined. The technique for obtaining uncontaminated material from the various levels of the lower part of the genital tract was definitely improved. About three fourths of the cases were gonorrheal in origin and about one fourth were nongonorrheal. Thirty-five per cent of the patients in this series were 5 years of age and 50 per cent from 5 to 9. The remaining 15 per cent were from 10 to 14 years old. The onset of the infection reached a peak in May, and there were slightly more cases during the spring and summer than during the fall and winter. The only constant symptom as obtained from the history was the presence of a discharge, which at the onset was profuse, greenish yellow and purulent. The vulva was always involved, the cervix almost always and the urethra in about half of the cases of gonorrheal and a fourth of the cases of nongonorrheal infection. The vagina was involved in 41 per cent of the cases of gonorrheal and in 19 per cent of the cases of nongonorrheal infection. Valid clinical criteria were not found to distinguish between the gonorrheal and the nongonorrheal infections. The differential diagnosis was based entirely on examination of smears and cultures. In more than half the cases of gonorrhea the infection was contracted in the home and in all but one case the source of infection was an adult. A 2 per cent solution of strong protein silver in tragacanth jelly was the most effective preparation for local

¹ Pierce G. N. and McNaught J. B. *Proc. Soc. Exper. Biol. & Med.* 36: 5-9 (June) 1937.

² Blotner Harry. *Effect of Alcohol on Digestion by Gastric Juice Trypsin and Pancreatin*. J. A. M. A. 106: 1970 (June 6) 1936.
Reichert J. L., Epstein I. M., Jung R. H. and Colwell C. A. *Infection of the Lower Part of the Genital Tract in Girls*. J. Dis. Child. 54: 49 (S., L.) 1937.

application. It resulted in an apparent cure in 80 per cent, with recurrences in 10 per cent. Estrogen was used in treating thirty-two cases, with the frequent result of causing engorgement of the breasts and growth of pubic hair. Although a larger percentage of patients thus treated were apparently cured in a shorter time, there was a higher incidence of exacerbation in this group. In the final analysis the results were similar in the two series. In a small group of patients theelin suppositories were used in conjunction with the local treatment, with results indicating the further reduction in the total amount of estrogen necessary to effect a cure. Since treatment with estrogen should be as restricted as compatible with consistently good results, the use of theelin in oil or in suppositories with adjuvant local treatment in cases in which the infection recurs or does not respond seems to offer the most satisfactory form of treatment for gonorrheal infection of the lower part of the genital tract.

Association News

THE SAN FRANCISCO SESSION

Applications for Hotel Reservations

The Subcommittee on Hotels of the Local Committee on Arrangements has furnished a list of San Francisco hotels and rates for rooms, which may be found on advertising page 55 of this issue of THE JOURNAL together with an application form that may be used to secure reservations through the Subcommittee on Hotels. The form that is printed in the advertising pages may be clipped and, when properly filled in, should be sent at once to Dr. Frederick C. Warnshuis, Chairman of the Subcommittee on Hotels of the Local Committee on Arrangements, Suite 2004, 450 Sutter Street, San Francisco, Calif.

If those who expect to attend the annual session of the American Medical Association will send in their applications at the earliest possible time, there should be no difficulty encountered in securing satisfactory accommodations. Applicants for reservations are especially requested to include a second and a third choice in order that good accommodations may be assured if the desired reservation cannot be had at the hotel of preference.

RADIO BROADCASTS

The American Medical Association and the National Broadcasting Company present the fifth series of network health programs, beginning Oct. 13, 1937, and running weekly through June 15, 1938. The programs will be presented over the Red network each Wednesday at 2 p. m. eastern standard time, 1 p. m. central standard time, 12 o'clock noon mountain standard time and 11 a. m. Pacific standard time.

The dates and topics of the broadcasts for the coming months are as follows:

Hygiene

November 24—Rest, Relaxation, Refreshment: all work and no play, or all play and no rest—bad for health.

December 1—Tuberculosis, Foe of Youth: how bad habits of hygiene and unwise living, plus infection, favor tuberculosis.

Diet

December 8—It Takes All Good Foods: a well rounded diet and how to get it.

December 15—Vitamins, Minerals and Common Sense: more about a balanced diet in special relation to minerals and vitamins.

The stations on the Red network are privileged to broadcast the program but since it is a noncommercial program they are not obligated to do so. Interest on the part of medical societies, women's auxiliaries and others may have weight with program directors of local stations. A personal visit to the program

director might be advisable if the program is not being taken by a local station. This is an opportunity for the appropriate committees of county medical societies to indicate their interest in having this program broadcast in their community and to enlist the interest of other groups.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH)

CALIFORNIA

Personal—Dr. Frederick L. Reichert, San Francisco, received the honorary degree of doctor of science from Franklin and Marshall College, Lancaster, Pa., October 3.

Limit Sale of Sulfanilamide—The California State Board of Public Health, recognizing the dangers that lie in the promiscuous use of sulfanilamide, issued an order September 14 to limit its sale and prevent its unauthorized use, according to the *Weekly Bulletin* October 23. Until more is known of the reactions that it may produce in the patient, its sale is prohibited.

University News—The fifth annual meeting of the Pacific Coast Section of the American Student Health Association will be held at Mills College November 26-27. The program will include a discussion of venereal diseases and their control, student health with reference to tuberculosis, syphilis, typhoid and other diseases, administration of the hygiene of environment, informational hygiene, and the hygiene of physical education activities. Dr. Ruby L. Cunningham, University of California, Berkeley, is president.

COLORADO

Society News—At a meeting of the Northeast Colorado Medical Society in Sterling, October 14, Dr. Alfred R. Masten, Denver, spoke on 'Tuberculosis and the Family Physician'.—The Mesa County Medical Society was addressed October 19, among others, by Dr. Galen M. Hoyer, Grand Junction, on 'Functional Disorders of the Digestive Tract'.—Dr. Paul S. Wolfe, Pueblo, discussed fever therapy before the Pueblo County Medical Society, October 19.

CONNECTICUT

Monthly Lectures in Different Towns—The Fairfield County Medical Association has built its program for the coming year around a discussion of the heart and related subjects, in cooperation with local medical societies throughout the county. Dr. Milton C. Wintermütz, Anthony N. Brady, professor of pathology, Yale University School of Medicine, New Haven, opened the series in Springdale October 6 with 'Pathology of Arteriosclerosis' as his subject. The monthly meetings will be held in a different town each time and other speakers all of New Haven, will include:

Dr. Louis H. Nahum: Coronary Diseases—Diagnosis and Therapy.
Dr. John R. Paul: Rheumatic Cardiovascular Conditions.
Dr. George Blumer: Subacute Bacterial Endocarditis.
Dr. Harold M. Marvin: Myocardial Failure.
Dr. Clarence L. Robbins: Edema: Its Differentiation and Treatment.
Dr. Harry M. Zimmerman: Vascular Diseases of the Central Nervous System.
Dr. Ashley W. Oughterson: Peripheral Vascular Disease—Its Conservative Treatment.

DISTRICT OF COLUMBIA

Annual Tuberculosis Meeting—The annual public meeting and 'health crusade' of the District of Columbia Tuberculosis Association will be held in the auditorium of the U. S. Public Health Service November 22. A symposium on 'How to Protect Your Home Against Tuberculosis' will be presented with the following speakers:

Dr. Jay Arthur Myers: Minneapolis: Modern Methods in the Control of Tuberculosis.
Dr. Cameron St. C. Guild: New York: The High Incidence of Tuberculosis Among Negroes.
Dr. James G. Townsend: Washington: Milestones Toward Adequate Hospitalization for the Tuberculous in the District of Columbia.

ILLINOIS

Report on Alcoholism—Damage to health from alcoholism is apparently increasing in Illinois, particularly among women, according to a state health department report. During the last five years, a sharp upward trend has marked the death rate from cirrhosis of the liver. Although the number of deaths attributed directly to alcoholism (123) was the same in 1932 and in 1936, the number attributed to cirrhosis of the liver went up from 743 to 907, a rise of 22 per cent. The increase in mortality from cirrhosis of the liver during the last five years was equal to the increase during the preceding decade in Illinois, indicating that some factor has been introduced or increased in magnitude to accelerate the upward trend. Among women the mortality attributed directly to alcoholism in 1936 was more than double what it was in 1932, four and nine in the two years, respectively.

Chicago

Hospital News—"Twenty Years at the Carville Louisiana Leprosarium" was described by Sister Catherine at a meeting at St. Joseph Hospital, November 10. The paper was discussed by Rev. Father M. J. O'Connell, president of DePaul University, and Dr. Morris Fishbein, Editor of THE JOURNAL.

Louis A. Greensfelder Memorial Lectureship—Dr. Corneille Heymans, professor of pharmacology and therapeutics, University of Ghent, Belgium, will present the Louis A. Greensfelder Memorial Lecture at the Rothschild Auditorium, Michael Reese Hospital, November 23, on "The Physiological Considerations of Surgical Intervention in Hypertension." Discussions will be presented by Drs. Harry Goldblatt, professor of experimental pathology, Western Reserve University School of Medicine, Cleveland, on "Surgical Application of the Physiological Principles in Experimental Hypertension." Max M. Peet, professor of surgery, University of Michigan Medical School, Ann Arbor, and Alfred W. Adson, professor of neurosurgery, University of Minnesota Graduate School of Medicine, Rochester, Minn., "Surgical Application of Physiological Principles in Clinical Hypertension."

Society News—Marion Hood, Ph.D., discussed "Trichinosis" and Bertha Kaplan Spector, Ph.D., "Amoebiasis" before the Chicago Council of Medical Women November 5.—At a meeting of the Chicago Surgical Society, November 5, Dr. John Martin discussed "Ventricular Changes in the Presence of Intracranial Pathology, with Demonstration of Models."—The Chicago Pathological Society was addressed November 8, among others, by Drs. Paul R. Cannon and Theodore E. Walsh on "Potential Dangers of Intranasal Medication."—At a meeting of the German Medical Society of Chicago, November 2, Drs. Leo J. Latz and Franklin E. Hall discussed "Recent Studies on Fertility and Sterility in Women" and "The Inverted Uterus" respectively.—Dr. Maurice I. Kaplan, among others, addressed the Chicago Society of X-Ray Technicians November 4 on "Anatomy and Physiology of the Gastro-Intestinal Tract."—The Chicago Gynecological Society was addressed November 19 by Drs. Max Cutler on "Complications Associated with the Radiation Treatment of Cancer of the Cervix" and Edward L. Cornell and Dorris F. Rudnick on "Clinical Manifestation and Treatment of Stricture in Women."

Campaign Against Quacks—The Illinois State Department of Registration and Education, Springfield, has been conducting a campaign against illegal practitioners. Following is a list of those cases which have come to trial:

Helena Modzelewski, 2718 West Twenty Third Street, found guilty October 28 and fined \$100 and costs.

Joseph Costello, 2801 West Harrison Street, pleaded guilty September 20, sentenced to ten days in county jail and placed on six months probation.

August Dietz, 6141 Dorchester Avenue, pleaded guilty September 9 and placed on one year's probation.

E. A. Romanoski, 1240 North Damen Avenue, pleaded not guilty, found guilty September 28, fined \$100 and costs and sentenced to ten days in the county jail.

Sidney Butler, 4554 Broadway, pleaded guilty November 2 and fined \$100 and costs.

L. A. Cline, 2025 South Western Avenue, found guilty and placed on six months probation.

Elmer L. Spencer, 13008 South Western Avenue, Blue Island, sentenced October 16 to thirty days in jail and fined \$150 and costs; defendant will appeal.

Harry Trestrail, 3325 North Lincoln Avenue, pleaded guilty September 27 and fined \$100 and costs.

Niketas D. Vliarinos, 1714 West Madison Street, fined \$100 and costs October 11 and sentenced to twenty days in jail. Unable to pay fine will have to serve fine in jail at \$1.50 per day.

Anna Zbieranek, 9139 Commercial Avenue, found guilty October 26 and fined \$100 and costs.

A. A. Williams, Aurora, Ill., pleaded guilty October 5, fined \$100 and cost.

INDIANA

Society News—The Indianapolis Medical Society was addressed November 9 by Drs. Albert Murray DeArmond and Frederic W. Taylor on "The Midbrain and Its Role in the Production of Clinical Symptoms" and "Gunshot Wounds of the Abdomen" respectively. Dr. Claude S. Beck, Cleveland, will give an address on "Recent Developments in the Surgery of the Heart" before the society November 20. Dr. Eugene B. Mumford will present a paper entitled "Treatment of Fractures of the Hip" before the society November 30, and Dr. Arthur F. Weyerbacher, Tumors of the Testicle.—Dr. Robert M. Moore, Indianapolis, discussed "Cardiovascular Emergencies" before the Jasper-Newton County Medical Society in Remington October 28.—At a meeting of the Fort Wayne Medical Society in Fort Wayne November 2, Dr. Paul A. O'Leary, Rochester, Minn., spoke on "The Treatment of Syphilis."—The Fountain-Warren County Medical Society was addressed in Kramer, November 4, by Dr. Frank W. Peyton, Lafayette, on "The Management of Abortions."—At a meeting of the St. Joseph County Medical Society in South Bend, October 26, Dr. Carl J. Rudolph, South Bend, discussed "Efficiency of the Eyes."—The Gibson County Medical Society was addressed in Princeton, October 11, by Dr. John M. Cunningham, Indianapolis, on "Diagnosis and Treatment of Chronic Appendicitis."—At a meeting of the Elkhart County Medical Association in Elkhart, October 13, Dr. Philip H. Kreuscher, Chicago, spoke on brachial plexus.—At a meeting of the Tipton County Medical Society, Tipton, October 15, Dr. John R. Brayton, Indianapolis, discussed "Skin Diseases of Childhood and Early Adult Life."

KENTUCKY

Psychiatric Association Formed—The Kentucky Psychiatric Association was recently organized at a meeting in Lexington with the following officers: Drs. Isham Kimbrell, Lexington, president, S. Spafford Ackerly, Louisville, vice president, and Robert H. Felix, Lexington, secretary. The first meeting will be held in Louisville January 8. The stated objectives of the society are "to further the study of subjects pertaining to the nature, treatment and prevention of nervous and mental disorders, to further the interests, the maintenance and advancement of standards of hospitals for nervous and mental disorders or outpatient clinics, and of all other agencies concerned with the medical, social and legal aspects of these disorders, to further psychiatric education and research and to apply psychiatric knowledge to other branches of medicine to other sciences and to the public welfare of the citizens of the state of Kentucky."

MASSACHUSETTS

Personal—Albert Baird Hastings, Ph.D., Hamilton Kuhn, professor of biochemistry, Harvard University Medical School, has been appointed a member of the Medical Fellowship Board of the National Research Council for the period ended June 30, 1941, to complete the unexpired term of Dr. Walter B. Cannon, Cambridge, resigned.

Society News—Dr. Roger I. Lee, Boston, read a paper entitled "Coronary Thrombosis: A Clinical Entity That Differs in Practice from Textbook Description" before the Hampden District Medical Society, October 26.—The Massachusetts Society for Mental Hygiene was addressed at its annual meeting in Boston, November 17, by Lincoln D. Lynch, superintendent of schools, Norwood, on "A Child Guidance Department for Elementary Schools." The Norwood School Project and Donald D. Durrell, Ed.D., professor of education and director of the educational clinic, school of education, Boston University, on "Educational Adjustments to Individual Needs."

Sunday Afternoon Lectures—Free public health lectures are being given on Sunday afternoons under the auspices of Beth Israel Hospital, Boston, and the woman's auxiliary. The first lecture was delivered November 7 by Dr. Charles F. Wilensky on "The Prevention and Control of Disease." The remaining lectures in the series include:

Dr. Elliott P. Joslin, November 21, Diabetes: Its Cause and Treatment.

Dr. Harry Linenthal, December 5, You and Your Doctor.

Dr. Charles G. Mixter, December 19, Appendicitis and Other Abdominal Emergencies.

Dr. Herman L. Blumgart, January 9, High Blood Pressure and Heart Disease.

Dr. Harry F. Friedman, January 23, What to Do About Cancer.

Dr. Harry C. Solomon, February 6, Mental Health.

Dr. Jacob H. Swartz, February 20, Dangers That Lurk in Cosmetics.

Dr. Armin Klein, March 6, What Can Be Done in Arthritis.

MICHIGAN

Dedication of Deaconess Hospital—The dedicatory program of the new building of the Evangelical Deaconess Hospital, Detroit, took the form of a clinic November 10. A clinical pathologic conference by Dr Plinn F Morse opened the program with Dr Raymond B Allen, dean of Wayne University College of Medicine, acting as chairman. Guest speakers included

Dr Irving W Potter Buffalo
Dr Wilms D Gatch dean and professor of surgery Indiana University School of Medicine Indianapolis
Dr Albert C Furstenberg dean and professor of otolaryngology University of Michigan Medical School Ann Arbor
Dr Elliott P Joslin clinical professor of medicine Harvard University Medical School Boston

MONTANA

Graduate Courses—The Medical Association of Montana sponsored a series of graduate meetings in Billings November 8-9, Anaconda November 10-11 and Havre November 12-13, with the Hill County, Yellowstone Valley and Mount Powell medical associations cooperating. The program included the following speakers

Dr Karl W Laymon instructor in syphilis and dermatology University of Minnesota Medical School Minneapolis
Dr Myne G Peterman professor and director of the department of pediatrics Marquette University School of Medicine Milwaukee
Dr Morris Edward Davis associate professor of obstetrics and gynecology, Division of Biological Sciences University of Chicago

Dr Laymon gave a public lecture in Billings on syphilis, November 8. Dr Peterman in Anaconda, November 10, "What Your Physician Will Do for You," and Dr Davis in Havre, November 12, "Modern Motherhood."

NEBRASKA

Hospital News—Bryan Memorial Hospital Lincoln, presented a "Clinic Day" October 1 with the following members of the faculty of the University of Minnesota Medical School Minneapolis in charge of the program: Drs Cecil J Watson, William T Peyton, Charles D Creevy and James S McCartney.

District Meetings—A program on diabetes was presented at a meeting of the Seventh Council District Medical Society in Davenport October 14 by Drs Frank M Conlin, Frank Lowell Dunn and Morris Margolin, all of Omaha, and Floyd L Rogers, Lincoln. A joint meeting of the Ninth and Tenth Council District Medical Societies was held in Holdrege September 30, with the following scientific program: Drs Donaldson W Kingslev, Hastings, on "Carcinoma of the Prostate," Philip H Bartholomew, Lincoln, "State Health Program" and George Alexander Young, Omaha, "Infantile Paralysis." Dr Homer Davis, Genoa, president-elect of the Nebraska State Medical Association, spoke on medical organization. The Twelfth Council District Medical Society held a joint meeting with the Western Nebraska District Dental Society in Alliance, September 30. Omaha speakers presented the scientific program as follows: Drs William L Shearer, "Focal Infections of Dental Origin," Herman F Johnson, "Indications for Open Reduction of Fractures and Dislocations," and Rollin Russell Best, "Lesions of the Rectum and Colon."

NEW YORK

Changes at Albany Medical College—Dr Victor C Jacobsen, Troy, has been appointed associate professor of medicine at Albany Medical College, Albany, and attending physician to the Albany Hospital. Dr Jacobsen was professor of pathology at the college from 1921 to 1934. Dr Lloyd H Ziegler, professor of neurology and psychiatry, has resigned to become associate medical director of the Milwaukee Sanitarium, Milwaukee, and lecturer in psychiatry at the University of Illinois College of Medicine, Chicago.

Stop Distribution of Polyvalent Serum—The division of laboratories and research of the New York State Department of Health announces that it has discontinued distribution of typhoid-paratyphoid vaccine and of polyvalent antidyenteric serum. This action was taken after it was found that the incidence of paratyphoid was extremely low in the state and that vaccines containing paratyphoid B strains were likely to cause more severe reactions in certain persons than the typhoid antigen. With respect to the polyvalent antidyenteric serum, it was stated that the distribution has been extremely limited in recent years and that the serum appears to be effective mainly against the more toxic Shiga strains, which are rare in the state.

Meeting on Cancer in Buffalo—A group of talks on the cancer problem was presented at a meeting in Buffalo October 28 as the second of a series of health talks under the auspices of the Buffalo Academy of Medicine, the Medical Society of the County of Erie, the Eighth District Dental Society, the American Society for the Control of Cancer and the Health Division of the Council of Social Agencies. The speakers were Clarence C Little, Sc D, Bar Harbor, Maine, "The Campaign Against Cancer," Drs Burton T Simpson Buffalo, "Scientific Facts About Cancer for Doctor and Layman," John M Swan, Rochester, "What the Layman Should Know," and Karl F Eschelmann, Buffalo, "Diagnosis and Treatment for Cancer in a Public General Hospital."

Society News—Dr Descum C McKenney, Buffalo, addressed the Medical Society of Niagara County, Lockport, October 12, on "Rectal Emergencies in General Practice." Dr Harold D Harvey, New York, addressed the Otsego County Medical Society recently in Cooperstown on "Early Efforts to Evaluate the Results of Sulfanilamide." Drs Ferdinand J Schoeneck, Syracuse, and Ross E Herold, Willard, addressed a meeting of the Seneca County Medical Society at the Willard State Hospital, October 14, on "Disproportion in Obstetrics" and "Insulin Shock Treatment in Dementia Praecox" respectively. Dr John Worden Kane, Binghamton, addressed the Broome County Medical Society, Binghamton, November 9, on "Neurosurgical Problems." Dr Robert A Kilduffe, Atlantic City, N J, addressed the Binghamton Academy of Medicine, October 19, on "Clinical Utilization of Blood Studies."

New York City

The Brickner Lecture—Dr Sterling Bunnell, San Francisco, gave the seventh Walter M Brickner Lecture at the Hospital for Joint Diseases, November 18, on "Reconstructive Surgery of the Injured Hand."

Hospital News—An oil painting of Dr Adolph Bonner and a bronze plaque of Dr John Linder were presented to the Jewish Hospital of Brooklyn at a ceremony November 4 in recognition of their services as members of the medical staff. Dr Bonner graduated from the College of Physicians and Surgeons of Chicago in 1896, and Dr Linder graduated from the University and Bellevue Hospital Medical College in 1904.

Annual Hospital Fund Campaign—The United Hospital Fund, representing ninety-two voluntary hospitals, opened its annual campaign for funds with a dinner at the Hotel Commodore, October 25. John W Davis is chairman of the campaign. No definite goal was set, but it was announced that the minimum needs of the member organizations aggregate \$3,171,134. It was reported November 15 that \$833,003 had been pledged.

Personal—Dr Alexis Carrel of the Rockefeller Institute for Medical Research received the honorary degree of doctor of science from the Board of Regents of the University of the State of New York at its seventy-third convocation, October 15. Dr Haven Emerson, professor of public health practice, College of Physicians and Surgeons, Columbia University, received an honorary doctor's degree at the recent celebration of the hundredth anniversary of the University of Athens.

Program of Heart Disease Lectures—Dr Irving R Roth delivered the first of a series of lectures on heart disease, sponsored by the New York Heart Association, November 9, on "Management of Patients with Heart Disease." Lectures for the remainder of the year are as follows:

Dr Sidney P Schwartz Use of X Rays and Fluoroscopy in the Management of Heart Diseases November 23
Dr Arthur M Master Use of Electrocardiograms in the Diagnosis and Prognosis of Coronary Thrombosis December 14
Dr Harry Gold Diagnosis and Treatment of Disorders of Rhythm Clinical and Electrocardiographic Aids December 28

Illegal Practitioners Convicted—The New York State Board of Medical Examiners has recently reported conviction and sentence of the following illegal practitioners:

Abram S Rosenstein three months in the workhouse sentence suspended during good behavior
Jack K Siegal thirty days in the workhouse and a fine of \$500 in default of which he was to serve another thirty days
Louis Raskin a fine of \$200 in default of which he was to serve thirty days in the workhouse
Stanley Mack a fine of \$200 in default of which he was to serve thirty days in the workhouse
Vincent J Morrow a fine of \$100 in default of which he was to serve thirty days in the workhouse
Carl Talbot (alias Roger Jabo alias Roger Rabo) sentenced to pay a fine of \$100 in default of which he was to serve sixty days in the city prison

OHIO

The Rachford Lectures—Albert Baird Hastings, Ph.D., Hamilton Kuhn professor of biological chemistry, Harvard University Medical School, Boston, delivered the seventh annual series of Benjamin Knox Rachford Lectures at the University of Cincinnati College of Medicine, November 11-12. Dr. Hastings' subjects were "The Distribution of Salts and Water in the Body" and "Experimental Observations on Dehydration and Edema."

University News—A tablet was dedicated at Western Reserve University School of Medicine October 29 to the memory of John Lund Woods, first extensive donor to the school. In 1881 Mr. Woods contributed to the purchase of the Cleveland campus, in 1886 he gave \$175,000 for a new building for the school of medicine and in 1892 an endowment of \$125,000, said to have been one of the first large gifts to medicine. He died in 1893. Drs. John Pascal Sawyer, professor emeritus of therapeutics and clinical medicine, and Torald H. Sollmann, dean of the medical school, were the speakers at the ceremony.

OREGON

Annual Registration Due December 1—All practitioners of medicine and surgery holding licenses to practice in Oregon are required by law to register annually on or before December 1, with the secretary of the board of medical examiners, and at that time to pay a fee of \$5. A practitioner failing to register is subject to a penalty of \$1 for each thirty days or part thereof of default, and his failure to reregister within ninety days after December 1 is a misdemeanor.

PENNSYLVANIA

Society News—Drs. Isidor S. Ravdin and Edward L. Bortz, Philadelphia, addressed the Lycoming County Medical Society, Williamsport, November 12, on "Nutritional Problems in Surgical Patients" and "Modern Treatment of Pneumonia" respectively. Dr. Louis H. Clerf, Philadelphia, addressed the Lebanon County Medical Society, Lebanon, November 9, on "Diagnosis and Treatment of Suppurative Diseases of the Lung."

Cancer Symposium—The Lehigh and Northampton county medical societies arranged a symposium on cancer for physicians and the public in Allentown November 18. During the day a scientific program was presented with the following speakers: Drs. William F. Rienhoff Jr. and Hugh H. Young, Baltimore; Vernon C. David, Chicago; George P. Muller, Leon Herman, Thomas A. Shallow and P. Brooke Bland, Philadelphia; and William L. Estes Sr., Bethlehem. In the evening Dr. Wilmer Krusen, Philadelphia, gave a public address at the Allentown High School on "What Everybody Should Know About Cancer."

Hospital Graduate Seminar—Easton Hospital, Easton, presented its eighth annual graduate seminar October 20 with the following instructors: Drs. Edward H. Dennen, New York, on "Choice of Instrument in Delivery with Forceps"; Theodor Blum, New York, "Medicolegal Cooperation in General and Special Practice"; Raphael Kurzrok, New York, "The Menopause"; George P. Muller, Philadelphia, "Stone in the Common Duct"; and John F. Mahoney, U. S. Public Health Service, Washington, D. C., "The Public Health Service Plan for the Control of Venereal Diseases."

Philadelphia

University News—Memorial rooms for Dr. Henry R. M. Landis, for many years director of the clinical and sociological departments of the Henry Phipps Institute, University of Pennsylvania, have been established in the suite he occupied at the institute. Dr. Landis died September 14.

Alvarenga Prize for 1938—The College of Physicians of Philadelphia announces that the Alvarenga Prize for 1938 amounting to about \$200, will be awarded July 14, 1938 to the author of the best work on any branch of medicine which may be deemed worthy of the prize. The prize paper will be selected from contributions published since January 1 and brought to the attention of the committee before May 1, 1938, by the author or by other sponsors, or from unpublished studies submitted to the committee in typewritten manuscript and received before May 1. Communications should be addressed to the Alvarenga Prize Committee, 19 South Twenty-Second Street, Philadelphia.

RHODE ISLAND

Society News—Drs. Ernest M. Daland and Richard H. Miller, Boston, addressed the Providence Medical Association November 1, on "Treated versus Untreated Cancer" and "Ulcer and Cancer of the Stomach and Ulcer of the Duodenum" respectively. Dr. Charles Bradley, East Providence, among others addressed the October meeting on "The General Practitioner and the Feebleminded Child."—Dr. Jesse P. Eddy III, Providence, addressed the Washington County Medical Society, Westerly, October 13, on "Blood Transfusions."

SOUTH CAROLINA

District Meetings—At the semiannual meeting of the First District Medical Association in Walterboro, November 18, a symposium on gastro-intestinal diseases was presented by Drs. William M. Bennett, Ruffin, George C. Brown, Walterboro, Joseph N. Walsh, Moncks Corner, and William H. Kelley, Charleston. Dr. Frederick E. Kredel, Charleston spoke on injuries to the head.—Dr. Edgar G. Ballenger, Atlanta, Ga., was the guest speaker at a meeting of the Fourth District Medical Society in Seneca, October 26. Other speakers included Drs. John M. Fleming, Spartanburg, on "Toxemias of Pregnancy"; Kent H. Smith, Greenville, "Congenital Urological Difficulties in Children"; James R. Young, Anderson, "Management of Acute Osteomyelitis"; and John F. Ramey, Greenville, "Management of Congestive Heart Failure."

TENNESSEE

Faculty Changes at Vanderbilt—Dr. Samuel L. Clark, associate professor of anatomy at Vanderbilt University School of Medicine, Nashville, has been promoted to a full professorship of anatomy, newspapers reported October 31. Dr. Alfred Blalock, associate professor of surgery, has also been made professor, and Dr. William DeGutierrez Mahoney, formerly of New Haven, Conn., now studying in London, has been appointed assistant professor of neurology, effective July 1, 1938. Dr. Frank H. Luton was promoted from assistant to associate professor of psychiatry and Dr. Charles M. Hamilton from instructor to assistant professor of clinical dermatology.

WASHINGTON

Personal—Dr. William E. Steele, Olympia, has resigned as chief medical adviser for the state department of labor and industries to enter private practice in Longview.

Society News—Dr. Frederick Lemere, Seattle, addressed the Grays Harbor County Medical Society, Aberdeen, September 15, on "Insulin Shock Treatment of the Psychoses."—Drs. Donald V. Trueblood, Seattle, and Edwin J. Barnett, Spokane, addressed the Spokane County Medical Society, Spokane, October 14, on "Tumors of the Neck and Parotid Gland" and "Wood Tick Paralysis in a Child" respectively. Dr. William W. Bauer, director of the Bureau of Health and Public Instruction, American Medical Association, Chicago, spoke at a special meeting October 26 on "The Place of the Doctor in the Community Health Program."

WEST VIRGINIA

Society News—Dr. Richard O. Rogers, Bluefield, was elected president of the Hospital Association of West Virginia at its recent annual session in Wheeling. Dr. William S. Fulton, Wheeling, president of the West Virginia State Medical Association, spoke at the annual banquet on cooperation between hospitals and the medical profession.—Dr. Raymond A. Ramsey, Columbus, Ohio, addressed the Cabell County Medical Society, Huntington, October 14, on "The Diagnostic Criteria of Hyperthyroidism and Hypothyroidism."—A symposium on peptic ulcer was presented before the Kanawha Medical Society, Charleston, October 14, by Drs. Alfred Sprites Brady Jr., Hugh A. Bailey, and Vernon L. Peterson, all of Charleston.—Dr. Jerome E. Andes, Morgantown, addressed the Monongalia County Medical Society, October 5, on "Diagnosis and Treatment of Uterine Bleeding."—Dr. Allen A. Tombaugh, McConnellsville, Ohio, addressed the Parkersburg Academy of Medicine, October 7, on "Early Diagnosis of Pulmonary Tuberculosis."—At a meeting of the Raleigh County Medical Society at Beckley recently Dr. Russel Kessel, Charleston, spoke on pelvic infections.—Dr. William F. Bransch, Rochester, Minn., addressed the Ohio County Medical Society, Wheeling, November 4, on "Common Lesions Found in the Urinary Tract of Children."

GENERAL

Hoeber Firm Will Continue—The firm of Paul B Hoeber Inc, which is the medical book department of Harper & Brothers, New York, will continue with Mr Paul B Hoeber Jr as his father's successor, according to a recent announcement. The *Annals of Medical History* will be continued under the general editorship of Dr Francis R Packard, Philadelphia. Mr Hoeber died August 20.

Changes in Status of Licensure—The Colorado State Board of Medical Examiners has reported the following action:

Dr Lewis J Greenfield, Denver, license restored October 5.

The Georgia State Board of Medical Examiners revoked the following licenses at a recent meeting for violation of the Harrison Narcotic Act:

Dr J W Lundy, Macon
Dr Z McD Story, Thomson

Results of Special Examinations—Seventy-nine out of 101 candidates were certified after an examination by the American Board of Otolaryngology in Chicago, October 8-9. An examination will be held in San Francisco June 10-11, 1938, prior to the annual session of the American Medical Association. Prospective applicants for certificates should obtain application blanks from the secretary, Dr William P Wherry, 1500 Medical Arts Building, Omaha, Neb.

Air Hygiene Meeting—The fall meeting of the Air Hygiene Foundation of America will be held November 30 at Mellon Institute, Pittsburgh. Reports will be presented by the medical, legal and preventive engineering committees, covering these three aspects of the occupational disease problem. Among the speakers will be Philip Drinker, Ch E, Boston, Dr Leroy U Gardner, Saranac Lake, N Y, Dr Anthony J Lanza, New York, and Dr Eugene P Pendergrass, Philadelphia.

Atlas of Dermatology—The ninth International Congress of Dermatology will publish in February 1938 an atlas of dermatology with 1,100 pages containing more than 4,000 illustrations (many in color) contributed by physicians of forty-four countries. Comparatively few copies will be sold and there will be no second edition, according to an announcement. Those who are interested in the atlas are requested to write without delay for a free illustrated prospectus from the Publishing Committee, Ninth International Dermatological Congress, VIII Maria-utca 41, Budapest, Hungary.

Attendants at Negro Births—The U S Bureau of the Census recently released a study of Negro births in the United States and the persons in attendance at these births. There were 255,125 births, of which 85,732, or 33.6 per cent, were in cities and 169,393, or 66.4 per cent, in the rural areas. Mississippi had the largest number of births, 26,259, and Idaho had none. Of the total number 44,059, or about 17 per cent, were attended by physicians in hospitals, 66,218, or about 26 per cent, by physicians not in hospitals, 142,791, or 56 per cent, by midwives, and 2,057, or nearly 1 per cent, by relatives, friends and neighbors. More than 10,000 births were attended by midwives in Mississippi, Georgia, Alabama, South Carolina, North Carolina and Louisiana. Texas, Massachusetts, Virginia and Arkansas reported the greatest number of Negro births unattended by physicians or midwives. The rates of Negro deaths under 1 year per thousand live births in states where midwives attended the largest number of births were reported as follows: Alabama, 80.8, Arkansas, 48.6, Delaware, 134.1, Florida, 88.3, Georgia, 80.6, Louisiana, 85.3, Mississippi, 59, North Carolina, 89.8, South Carolina, 95.8, Texas, 83.1, and Virginia, 96.2. The white infant mortality rates in these states ranged from 46.7 in Arkansas to 70.2 in Texas.

Southern Medical Association—The thirty-first annual meeting of the Southern Medical Association will be held in New Orleans November 30-December 3, at the Municipal Auditorium. Tuesday will be New Orleans Day, with general clinical sessions held separately for medicine, surgery, gynecology and obstetrics, ophthalmology and otolaryngology. All the speakers will be New Orleans physicians. Tuesday evening there will be a general public session with the following speakers:

Dr Stewart R Roberts, Atlanta, Ga, Your Health and Mine
Dr John Shelton Horsley, Richmond, Va, The Menace of Cancer
Dr Arthur T McCormack, Louisville, Ky, The Romance of Immunization

Rev Alphonse M Schwitala, St Louis, Society's Debts to the Doctor

Wednesday morning there will be two general sessions representing all specialties. At these meetings the speakers will include:

Dr Irvin Abell, Louisville, Ky, President Elect of the American Medical Association
Acute Abdominal Emergencies

Dr Frank H Lahey, Boston, Modern Developments in Anesthesia and Anesthetics
Dr James R Bloss, Huntington, W Va, Home Obstetrics
Dr Marvin A Stevens, New Haven, Conn, Sport Injuries
Dr Frank C Mann, Rochester, Minn, Physiologic and Pathologic Reactions of the Liver

Speakers listed on the program to address section meetings include:

Dr Robert A Cooke, New York, Medical Problems of the Allergist
Dr Priscilla White, Boston, Protamine Insulin in the Treatment of Juvenile Diabetes
Eleanor A Bliss, Sc D, Baltimore, The Differentiation of Hemolytic Streptococci and Its Relation to Sulfanilamide Therapy
Dr Perrin H Long, Baltimore, Further Observations upon the Use of Sulfanilamide and Its Derivatives
Dr Walter C Alvarez, Rochester, Minn, Some Stages in the Development of Gastroenterology
Dr George S Stevenson, New York, History of the Mental Hygiene Movement in America
Dr Lawrence Reynolds, Detroit, Pulmonary Cysts
Dr Raymond A Vonderlehr, Washington, D C, Control of Syphilis in the Southern States
Dr Arthur W Allen, Boston, The Role of Surgery in Peptic Ulcer
Dr Henry H Kessler, Newark, N J, Cineplastic Operations
Dr Jean Paul Pratt, Detroit, Treatment of the Menopause
Dr Frederick H Falls, Chicago, The Use of Progestin in Obstetric Complications
Dr Thomas J Kirwin, New York, The Problem of Bladder Tumors and Their Treatment
Dr Gabriel Tucker, Philadelphia, Benign Tumors of the Larynx: Diagnosis and Treatment
Dr William L Benedict, Rochester, Minn, Concerning Exophthalmos with Special Reference to Goiter
Dr William D Cutter, secretary, Council on Medical Education, American Medical Association, Chicago, The Appraisal of Medical Schools
Dr Carlos E Finlay, Havana, Cuba, Medical Education in Cuba: Recent Reforms and Future Plans

The following organizations will hold their annual meetings in conjunction with the association: the American Society of Tropical Medicine, the southern branch of the American Public Health Association, the National Malaria Committee, Region II of the American Academy of Pediatrics, the southern section of the Society for Experimental Biology and Medicine and a special round table group of allergists.

FOREIGN

Nobel Prize Awarded to Professor Szent-Gyorgyi—The 1937 Nobel Prize for Physiology and Medicine has been awarded to Prof Albert Szent-Gyorgyi, professor of medical chemistry, Szeged University, Szeged, Hungary, "as a reward for his discoveries on the biological process of combustion, especially in relation to vitamins A and C." Professor Szent-Gyorgyi has carried on his research in laboratories in Austria, Germany, England and the United States. He spent some time at the Mayo Clinic, Rochester, Minn, and in Chicago and has lectured at Harvard University. His main achievement has been the isolation and chemical analysis of vitamin C, which he produced in pure form from peppers.

Plans for Congress of Physiology—The sixteenth International Physiological Congress will be held in Zurich, Switzerland, Aug 14-18, 1938, under the presidency of Prof W R Hess of the University of Zurich. The general secretary is E Rothlin, Basle. All members of physiologic, biochemical, experimental pathologic and pharmacologic institutes or laboratories are entitled to participate, those who are not members of any recognized laboratory or institute must be recommended by the director of a recognized laboratory or institute or by the president of a recognized society. The congress will meet in six sections as follows: general and comparative pathology, physiology, biophysics, biochemistry, applied physiology, psychophysiology and pharmacology. Before the congress there will be an international meeting for cell research, August 7-13, under the presidency of Prof von Moellendorff of the Anatomical Institute, Zurich.

Deaths in Other Countries

Hans Christian Jacobaeus, professor of medicine, Stockholm Medical Institute, died October 29, aged 58. He is known for a method of cauterizing pleural adhesions.

CORRECTION

Rhoads Instead of Rhodes—Dr W B Castle, Boston, has called attention to the misspelling of an author's name mentioned in the Current Comment entitled 'Experimental Anemia,' page 1458, THE JOURNAL, October 30. In the several times that this author's name was used, it should have been spelled Rhoads instead of Rhodes.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Oct 23, 1937

Treatment of the Undescended Testicle

The pathology and treatment of the undescended testicle are still controversial subjects. It has not been settled whether the testicle fails to descend because of imperfect development or is imperfectly developed because it has not descended. In opening a discussion on the treatment at the Royal Society of Medicine, Prof. Grey Turner said that he had never been satisfied that descent occurs later than the age of 3 years, but he suggested that detailed information on this point might be obtained from school medical officers. As shown later, this was forthcoming. He thought that the unilateral and bilateral cases might belong to entirely different groups. In the unilateral the scrotum was always developed, but the testicle which was descended and the penis might be small or abnormally large and rarely were grossly undeveloped. In the bilateral cases there were certainly two groups. In one the external genitals were very small and ill developed, with scarcely the appearance of a scrotum. In the other the penis was fully or even abnormally developed and the scrotum was normal. It was the latter group which was said to beget children. In both groups, secondary sexual characteristics were present though not equally developed. It was unlikely that the underlying problem was the same in the two, for in one there was obviously some general lack of development of the whole genital apparatus whereas in the other this lack appeared to affect only the testicle. In the former some general endocrine stimulus appeared to be the most important requirement, in the latter the mechanical assistance of surgery might supplement or even supplant such treatment.

It had been customary to assume that if a testicle, however small, could be successfully returned to the scrotum, it would develop normally. But this did not always hold. Turner had found that, if after reposition the organ was going to develop, it did so almost at once. If not, probably development would not occur. In a good many cases of successful replacement the condition was probably an ectopic testicle rather than one which had failed to descend.

Although endocrine treatment had given encouraging results, it failed in many cases. If it failed after twelve months' trial in those who had arrived at puberty, operation should be undertaken. Knowledge is desired whether endocrine treatment will make a testicle develop after it has been brought into the scrotum surgically but seems reluctant to mature. He suggested that probably the best time for operation was between the ages of 10 and 14 and that operation was still worth while when the patient presented himself later. Even in adults, if the organ was well developed, replacement had some psychological advantage.

Dr. R. E. Smith, medical officer of Rugby School, said that he had under observation 600 boys between the ages of 13 and 18 in one school and some 400 between the ages of 9 and 18 in another. In six years he had collected data on twenty-three cases of undescended testicle and found that the testicles usually descended into the scrotum at puberty in the majority of those who reached it. The age of descent varied from $12\frac{3}{4}$ to $14\frac{1}{4}$ years in seven cases. In an eighth it was $16\frac{1}{2}$ years, but this boy had general endocrine deficiency. Of three failures one had an ectopic testis and one had had an unsuccessful operation at the age of 8 years. The remainder of the boys being observed have not reached puberty, their ages being from 9 to 14 years. Dr. Smith therefore concluded that the undescended testes should be left to nature until puberty, provided

ectopic testes can be excluded. If no change then occurs, gonadotropic extract should be given in full doses. If this fails, the aid of the surgeon should be sought to ascertain whether some abnormality is preventing descent.

The Prevention of Tuberculosis

In a letter to the *Times*, Sir Pendrill Varrier-Jones, the pioneer of the village settlement for the treatment of tuberculosis, points out that our present system is sadly lacking in prevention. Large numbers of patients are discharged from sanatoriums after treatment and are subsequently readmitted. In many cases discharge and readmission are constantly repeated. In other words, infectious patients are being discharged, often at their own request, to their homes, there to spread infection until dire necessity drives them to seek treatment once more. The dismal round is repeated, each time with less hope, while a fresh crop of new cases is added to the dispensary lists. Sanatoriums are not designed for these recurrent cases, the length of stay tends to decrease as time goes on, and the patient is thus at liberty, for increasing periods, to distribute infection everywhere he goes. This obviously is a wasteful method. We are paying large sums for treatment and simultaneously allowing many of the results of that treatment to be destroyed, while imperiling the patient's family and friends. The individual consumptive has to make a considerable sacrifice. He has to be notified. Once notified he may lose his job and his home as well. In return for this sacrifice he obtains no certainty of cure, no certainty even that his family will be protected from the disease or from distress. Three courses are open to us: 1. To ignore the whole question, thus defeating the national health campaign in one important respect. 2. To imprison infectious consumptives in institutions contrary to their wishes and interests, a course which is not in accordance with democratic principles. 3. To provide an anti-infective environment in which they can live, work and earn, and in which therefore they will voluntarily remain. The last course is what Sir Pendrill has already taken in his village settlement.

Lord Rutherford Is Dead

Lord Rutherford, the great experimental physicist, has died at the age of 66 years. Born in New Zealand, he had a distinguished career at Canterbury College, Christchurch, and then worked at Cambridge under J. J. Thomson, in whose researches on the passage of electricity through gases he gave help, especially with regard to ions, by which this passage is accomplished. Thus began Rutherford's epoch-making researches on radioactivity. In 1919 he was appointed Cavendish professor of physics at Cambridge, succeeding in the great line of Maxwell, Rayleigh and Thomson. His work culminated in two hypotheses which lie at the foundation of modern physics: the transmutation of the elements and the constitution of the atom. He suggested the now familiar comparison of the atom to the solar system in which the proton containing practically the mass, was the sun and the electrons were the planets. Radioactivity was simply a consequence of the bursting of the atom, which also gave rise to new atoms. The radium atom gave rise to helium and to a new gas, which in his first doubts as to its nature he cautiously called the 'emanation'. This in its turn exploded after an average life of three or four days. The consequences of this wonderfully fruitful conception were worked out by himself, his pupils and others. He was a lovable personality, an enthusiast in the cause of science without thought of his own advancement and a colleague always ready to give due credit to others. His philanthropy was shown by the devotion of much of his valuable time to the Academic Assistance Council formed in 1933 to assist the scientists and scholars who were the victims of political persecution. He was one of the founders of the council and became its president. Dr. F. Demuth, chairman of the Not

gemeinschaft deutscher Wissenschaftler im Ausland, pays a special tribute to his work for expelled German scholars and scientists. Rutherford has been buried in Westminster Abbey near the tombs of Newton and other great scientists.

PARIS

(From Our Regular Correspondent)

Oct 23, 1937

The French Surgical Congress

This year's French Surgical Congress was held, as in former years, at the Medical School in Paris during the week beginning October 4. A number of foreign surgeons attended, many of whom took part in the discussions of the papers. Among those who were invited to do this on the subject of the treatment of burns may be mentioned Drs McClure of Detroit, Riehl of Vienna, Wilson of Edinburgh, Seemen of Munich and Donati of Milan. As is customary at all large annual meetings here, one or more subjects are chosen, by vote of the members at the preceding annual session, to be dealt with in the form of an analytic review of the literature and the personal experience of the reporters. These reports in the form of a book are sent to each member about a month before the annual meeting so that ample time is allowed to prepare for a discussion. The reports are prepared by members of the congress appointed by the president of the congress at the time the subjects are selected.

THE TREATMENT OF BURNS

The first report at this year's meeting was on the physiologic pathology and treatment of burns. The first part formed the subject of the report by Prof Pierre Duval of Paris and the second part (treatment) of Dr Mourgue-Molines of Montpellier, France. Only burns involving a minimum of one third of the skin surface and of the second and third degrees during the first four days were included. During this early period, the reactions of the organism are entirely due to the burns because infection as a factor does not enter into play until after the fourth day. These first four days are the critical period, during which general disturbances occur so rapidly and in such severe form that the term "phase of intoxication" can be justly applied to this brief period. The mortality during this phase of acute intoxication or toxemia is high. It is 40 per cent if from 25 to 30 per cent of the entire skin surface is involved and 100 per cent if more than 40 per cent is burned. The clinical picture, the humoral changes, the local (cutaneous) and visceral lesions in the human being when considered in the light of the results of animal experiments lead to the conclusion that this phase of intoxication or toxemia is a general one and is due to the absorption of toxic products formed in the burned area. It is similar up to a certain point to the symptoms and lesions of other toxemias by organic (diphtheria, typhoid) or chemical (pyridic bases) products. The toxemia is autogenous in severe burns, the source being in the burned tissues. This acute autogenous intoxication in the first four days of severe burns resembles greatly three other types of toxemia which we are beginning to understand, such as traumatic shock following severe injuries, and the intoxications accompanying roentgen therapy or curietherapy. Their clinical pictures and humoral reactions closely resemble each other. Observations of the physiologic pathology of recent extensive burns and the other toxemias open up a new field of what might be termed diseases due to autogenous intoxication. In animals it has been found that repeated burns confer a state of sensitization, which in turn confers a certain immunity or resistance toward burns.

Dr Mourgue-Molines said that, in spite of the greatly improved methods at present employed, extensive burns are still accompanied by a high mortality rate. This is especially true of children, in whom the fatal issue is out of all proportion to the extent of the burns. Children below 6 years of age constitute from 40 to 45 per cent of fatal cases. The severity of burns, as was pointed out by Professor Duval, is directly related to a

generalized toxemia, hence the first objective to be attained in the treatment is to combat this toxemia. It is useless, and perhaps does more harm than good, to attempt to apply hurriedly a huge dressing in order to avoid exposure of the burned surface to the air. If such a dressing is used, it should be one that can be easily removed. The burned area is not only a source of pain and exposed to infection but is a laboratory in which toxins are being constantly formed and an effort must be made to limit this to the minimum. The less a severely burned person is disturbed during the period immediately subsequent to the accident, the less harm will be done. One's first duty is to give sedatives to keep the patient warm and give stimulation. The general treatment includes the giving of saline solutions, plenty of fluids to combat dehydration, and transfusions. Infection is the first local complication to combat, and this calls for thorough removal of all necrotic tissue in an aseptic manner. In our present state of knowledge, the most rational and practical method of treatment is that first described by the late E. C. Davidson of Detroit, the underlying principle being to coagulate the dead tissues by the local use of tannic acid. It relieves the pain, prevents absorption of toxic products and helps cicatrization. In extensive burns it is best applied in the form of a solution, a combination of silver nitrate and tannic acid, as suggested by A. G. Bettmann of Portland, Ore. These methods were described in detail. Burns seen late or those due to oily substances which risk being infected should not be given the tannic acid treatment. Every granulating surface remaining after treatment should be covered with grafts of one type or another as soon as possible.

The discussion was opened by Dr Roy D. McClure of Detroit, who made a strong plea for the routine use of the tannic acid treatment of burns because it has resulted in a marked reduction in the mortality rate. There have been cases in which recovery occurred even though 55 per cent of the surface was involved. The formation of a protective crust eases the pain, converts wounds with large serous discharges into dry ones, diminishes the risk of infection and shortens the treatment. In addition to this local treatment, efforts are made to increase the patient's resistance by giving dextrose solution and by transfusions. The technique and results at the Ford Hospital were cited.

Dr Riehl of Vienna spoke of the good results in giving transfusions as recommended by him six years ago. Of 160 cases so treated, recovery occurred in 60 per cent. He also employs the tannic acid treatment but prefers the continuous bath for some cases, a treatment which is not as well known as it deserves to be.

Mr Wilson of Edinburgh used the tannic acid treatment in 200 children, of whom sixty-five had extensive burns. A 20 per cent solution is applied and the burn left exposed to the air or the latter artificially heated. Gentian violet or acriflavine is also used to combat the infection and adrenal extracts against the toxemia.

Seemen of Munich cleans the burned surface with a small metallic brush acting as an electrode. The surface is at the same time coagulated by the heat, a protective coating being formed.

Donati of Milan strongly endorsed the methods which aimed to prevent dehydration and intoxication.

Leriche of Strasbourg found that the tannic acid treatment did not prevent humoral changes. He uses mercurochrome in children and in infected burns, but heliotherapy is especially to be recommended for the latter.

Prollet and Limousin of Clermont-Ferrand have used cod liver oil dressings after the shock and toxemia of the first few days have been overcome.

EMBOLISM OF THE ARTERIES

The second report was on the pathologic physiology and treatment of embolism of the arteries of the extremities. The first of these divisions of the subject was assigned to Dr

J. Fiolle of Marseilles. In the summary he stated that one must consider three periods in the embolism cycle. First, that of the initial attack, with both local and general effects, the latter in the form of shock. Second, the period of changes in the arterial wall and thrombosis. Third, the final period of sequels. Taking these up in the order named, the first effect of an embolism is to give rise to reflex general symptoms, usually described as those of shock. Locally, the most prominent phenomenon is arterial spasm, at the onset, where the embolus is lodged and then distal to this point. This spasm is really a defense reaction but does more harm than good. There appears to be an especially sensitive area in the outer coat of an artery, which puts into motion reflexly the contraction of the vessel wall. As a result of this spasm, the circulation throughout all the divisions and collaterals of the blocked artery comes to a standstill. In favorable cases the process does not progress beyond the spasm stage unless some complication appears. Such an embolism is termed abortive (*man-queue*) if the reaction has been very severe and occult if it has taken place with scarcely any local signs. Spontaneous recovery is more frequently observed in arterial embolism of the upper than in that of the lower extremities, because of the ample anastomoses in the shoulder area. Abortive embolism is, however, not rare in the lower extremities, provided it has not taken place in an artery, such as the popliteal, which seems to favor the "fixation" or lodgment of an embolus. It is not always the size of the latter which determines this. At times the occlusion is the direct result of the lodgment at some bifurcation of a relatively small embolus.

In the second period, one must consider the changes in the arterial wall and the resultant thrombosis, which depend on whether the embolus was a septic one or not. The intima is not the seat of the principal changes, as was formerly taught, but rather the adventitia. On the other hand, the tunica media offers a remarkable resistance to inflammatory changes. The changes in this middle coat are rather of a degenerative than an inflammatory type. The adjacent vein also may be involved by extension from the predominantly inflamed tunica adventitia. The vascular spasm referred to as the principal feature of the first stage does not change, so that little blood is able to pass the point of lodgment of the embolus, where thrombosis is already beginning and extending in a proximal direction, thus blocking the orifices of the collaterals. The influence of stasis distal to the point of occlusion of the artery is such that clot formation is more marked distal to the occlusion than proximal to it.

A tiny embolus can be followed by thrombosis which is out of all proportion to the size of this embolus. Fiolle believed that primary arterial thrombosis is rare and that most often a minute embolus has been the starting point. He did not wish to give the impression that the first shock or arterial spasm period was sharply demarcated from the second or vessel changes period. The latter may appear very early and hardly be distinguishable so far as time is concerned from the spasm period.

Abortive embolisms afford an opportunity to study organization as it occurs in spontaneously cured cases. The obliterating clot becomes so firmly organized that at times it is difficult to dislodge. Recovery does take place at times, often accompanied by severe pain as the result of irritation of the sympathetic nerve fibers in the outer coat of the artery, but such abortive cases may run a painless course. As complications, one must keep in mind embolism of various viscera secondary to the same process in the extremities. Another complication is aneurysm formation.

TREATMENT OF EMBOLISM

The treatment of arterial embolism formed the subject of the portion of the report assigned to Dr. Funck-Brentano of Paris. He said that in the present state of our knowledge of the

question the following factors must be taken into consideration:

1. Peripheral ischemia must be regarded as a complication from the anatomic, physiologic and clinical points of view. Whatever treatment is given aims to influence only the effect and not the cause, hence the failures are all due to the particular method employed. A study of the results of operations for arterial embolism can for this reason lead to wrong conclusions.
2. The relative frequency of abortive embolisms ought to make any one very circumspect who studies the question of results. The apparent beneficial influence of any particular operation must always raise the question as to whether the operation was really responsible.
3. The crucial point of the entire question rests in the thrombogenic role of the embolus. The operation embolectomy, as proposed by Einar Key and other Swedish surgeons, aims to remove the obstacle (embolus) and the point of potential expansion of a clot in a distal direction. The anatomic factor dominates in this type of operation. This is why its advocates, knowing that the embolus and the secondary thrombosis present the same dangers, insist on operating within ten hours after the embolism has taken place.

Arterectomy, as proposed by Leriche and a few others, is based on two elements: (a) Anatomic. It suppresses the thrombus-producing area. (b) Physiologic. It allows a collateral circulation to be established. Operations of the indirect type, such as those on the paravertebral sympathetic ganglions only, aim to relieve vascular spasm and ignore the importance of the thrombus-producing properties of the embolus itself. Embolectomy, when carried out early enough and under favorable conditions, has given better results than any other direct operative method. Arterectomy with or without preceding endovascular exploration has a number of indications which are not opposed to embolectomy. Operations on the paravertebral sympathetic ganglions or other types of indirect treatment should be employed only as adjuvants and not as the sole methods of treatment. 4. From a practical standpoint, the indications for treatment depend on the time when the patient is first seen. Within the first ten hours embolectomy is the method of choice, following localization, by means of the clinical and radiographic data, of the level at which the embolism has taken place. The operation should be done with the patient under local anesthesia. If the patient is seen for the first time after an interval of more than ten hours, arterectomy is indicated. This is especially true of cases of long-standing obstruction.

Regardless of which of these two operations is done, medication in the form of cardiotonics or tonics aimed to raise the blood pressure should never be omitted.

The discussion was opened by Bedrna of Czechoslovakia, who said that there was a consensus as to the value of embolectomy during the first ten days. After this interval arterectomy had not given good results in his experience. On the other hand, in three of five cases success had followed resection of the third and fourth lumbar sympathetic ganglions. The two failures had occurred in the treatment of patients in an unfavorable general condition.

Albert of Belgium also emphasized the value of embolectomy in the early period but said that it entails the use of a perfect technique. Arterectomy at a later stage is followed by a certain degree of vasodilatation, which favors establishment of a collateral circulation. Instead of resection of the sympathetic ganglions, simple infiltration with a solution of procaine hydrochloride suffices.

Leriche of Strasbourg did not agree that the reflex arc whose afferent fibers were said to be in the tunica adventitia of the blocked artery, is as simple an affair as had been claimed. Even if it was admitted that this reflex arc exists, much could be accomplished by blocking the adventitia so that the reflex would follow a different course. He endorsed embolectomy as the operation of choice, to be carried out as soon as possible (within a few hours) after lodgment of the embolus and arterectomy in late cases. Infiltration of the sympathetic ganglions

is to be advised in preference to resection, because the patients are, as a rule, in no condition to undergo resection

Wertheimer of Lyons reported three cases which illustrated the difficulty of differential diagnosis between embolism and spasm. Infiltration of the sympathetic ganglions with procaine hydrochloride is of great value in giving relief from the severe pain as well as in distinguishing spasm from embolism.

Marc Iselin and Heim de Balsac of Paris maintained that the initial phenomenon is not the embolism. The artery ceases to pulsate, and coagulation ceases at this level. There is also relative independence between the circulation within the lumen of an artery and that in its wall. The latter does not depend, strictly speaking, on thrombotic occlusion of the artery, as those who advise arteriectomy believe.

Naulleau of Angers endorsed arteriography in the diagnosis of arterial embolism and also pointed out the importance of infiltration by procaine hydrochloride of the lumbar sympathetic ganglions. With the aid of arteriography he had been able to determine accurately the location of the embolus. Infiltration of the sympathetic ganglions should be employed as an adjuvant to embolectomy or arteriectomy.

FRACTURES

The subjects chosen for the third report were indications for operative intervention in the treatment of fractures and orthopedic methods in the treatment of closed diaphyseal fractures of the leg. The reporters were Dr. Merle d'Aubigne and Dr. Creysse of Paris and Dr. Dams of Brussels. Their reports represent an analysis of publications from many of the best European fracture clinics and particularly the experience of the largest French hospitals.

Drs. d'Aubigne and Creysse stated that the general principles to be followed are as follows: 1. The reduction should be carried out as soon as possible, to avoid later muscular contracture and edema. 2. Local anesthesia suffices in early cases. Preference is given to spinal over general anesthesia in late cases. 3. All reductions should be made under radiologic control either in the operating room or at the bedside, with facilities to develop films as close as possible to the place where reduction is made. 4. Every effort should be made to utilize mechanical means of reduction of a closed fracture.

The indications for treatment vary with the type of fracture. 1. In spiral fractures. When the patient is seen early (within the first four or five days) orthopedic reduction is nearly always possible. When the patient is seen more than two weeks after the accident, the prognosis is much less favorable. If transcalcaneal traction is not successful, and it frequently is not, an open reduction should be done. 2. In transverse or oblique fractures. For patients seen within a few days after the accident, orthopedic reduction only, under radiographic control, is indicated. For patients seen after two weeks, only operative reduction is of any avail, and osteosynthesis is necessary.

The value of any method of treatment depends largely on the special training of the surgeon in fracture work and on his organization. The orthopedic method is capable, with modern equipment, of producing perfect reduction in a relatively large number of patients if they are seen early. Simple plaster casts do not suffice as a means of maintaining the reduction in many cases of spiral fracture. Osteosynthesis with proper technique is followed by a high percentage of good results and greatly cuts down the length of treatment, at a minimum of risk of osteitis, intolerance of foreign material and disturbance of callus formation. Orthopedic methods with direct traction on the bone represent a great advance over simple plaster casts, but they greatly lengthen the period of treatment. The surgeon should have a number of methods at his disposal and not be limited to a single one.

Dams limited his report to the results obtained in using his method of keeping the fragments in apposition with the aid of stainless steel wire, as described in his monograph on osteo-

synthesis (Masson & Cie, Paris). The results were satisfactory in twenty-six patients with spiral fracture of the tibia who had been treated by bone suture.

In the discussion of these two reports on the treatment of fractures of the leg, Lambotte of Belgium stated that 90 per cent of the patients ought to be operated on within twelve or fifteen days after the accident, when the hematoma has been absorbed. He preferred external fixation of the fragments, by a method he had devised, and removed the appliance as soon as possible.

Charolanza of Italy preferred orthopedic reduction but called attention to the fact that perfect apposition does not always signify good function, and vice versa.

Leriche of Strasbourg, after trying all methods of fixation, now uses only metallic bone splints.

Fredet of Paris said that much of the criticism of bone splinting was unjust, because the splinting was done by surgeons with insufficient experience and equipment. Pseudarthroses caused by muscular interposition are much less to be feared than has formerly been believed.

Judet of Paris advocated immediate reduction on an orthopedic table under radiographic control and the application of a close-fitting cast. Transverse fractures, when once reduced, remained so in most cases, but this is not true of the oblique type. In fractures which cannot be reduced, open operation should not be delayed too long.

Twenty-one other surgeons took part in the discussion.

BERLIN

(From Our Regular Correspondent)

Oct 4, 1937

Congress of Orthopedic Society

At the Congress of the German Orthopedic Society, Dr. Baader, director of the Army Athletic School, delivered a lecture on "Physical Education and Fitness for Military Service." His talk contained comments on the recent examinations for military service (*THE JOURNAL*, June 20, 1936, p. 2171). He stated that the results of these examinations if carefully evaluated would appear less unfavorable than if hastily studied and that they by no means indicate a deterioration as against former times. In general, an earlier onset of puberty and an acceleration of growth are to be observed, and these phenomena entail various symptoms of weakness. The average height has increased, as has the number of extremely tall young men, whereas the numbers of the extremely undersized have diminished. The incidence of pedal deformities exhibits a geographic variation, such anomalies as a rule seem to be more frequent in the country than in the city, and in the lowlands as against mountainous regions. Defects of the feet are evaluated according to impairment of function and not on the basis of shape. In only 10 per cent of the men who presented anomalies of the shape of the feet was function impaired, and only 2 per cent had subsequently to be hospitalized. Erratic growth accounted for circulatory disorders in 77 per cent of the men, but only 07 per cent presented true heart disease. Physical exercise should not be carried to excess but it should surpass the stimulus threshold if it is to aid growth, namely, growth in the sense of a broadened and sturdy physique. Exercises which represent a prolonged strain are deleterious, but brief, diversified work-outs are, on the contrary, beneficial. The march with full equipment involves a prolonged strain on all the organs. Examination of a group of men that had marched 25 kilometers at as rapid a pace as possible and with each man laden with 13 Kg. of equipment, disclosed serious symptoms of overexertion, including inability properly to absorb nutriment. Such overexertion is particularly harmful to the more immature recruits and is definitely contraindicated as a form of exercise. Athletic contests such as football games, the 60 meter dash and so on constitute briefer, faster-moving types of exercise. Gym-

nastics ought to assume the form of games, otherwise the youths will become bored and not engage in the exercises with sufficient energy. The normal amount of sleep should not be curtailed. From an educational point of view, the glorification of athletic prowess by the newspapers is of questionable value.

Karl Gebhardt (Hohenlychen) suggested certain innovations in the case of residual defects following poliomyelitis. He attempts to treat old cases by an exercise therapy based on stimulation. Static fatigability is overcome by swimming in the brine bath. The most important residual defect encountered is the failure of muscular tonus, the normal control is lacking and this is more serious than the actual crippling. If additional effort is made, the healthy musculature has to be utilized. Supplementary surgery is to be considered only after several months of preliminary treatment. The intervention usually involves the sources of energy in the hip. Several muscles are transplanted to the hip, whence, by means of silk threads, the strength is conducted to the periphery.

Other papers were concerned with the campaign against defects of the foot and with orthopedic footwear. Prof. Franz Schede of Leipzig stated that fortunately the prevalence of pedal deformities was due not to hereditary factors but to environmental influence which inhibited proper development, to over-civilization. Outdoor life, going barefoot and so on can be of great prophylactic value. Factory-made orthopedic footwear he considers ineffective. A hard-soled boot restrains the muscles and weakens the foot. For the working population a more practical shoe ought to be designed, one that would not compress the toes. Other papers dealt with special orthopedic problems.

The Importance of the Electro-Encephalogram

Prof. Dr. Hans Berger of Jena, who is the inventor of the electro-encephalogram, has published a further report on his investigations in *Forschungen und Fortschritte*. In his opinion the electro-encephalogram and its greater oscillations, the so-called alpha waves, develop in man throughout the cerebral cortex and not, as Adrian of Cambridge assumes, only in the cortex of the occipital lobe. On the basis of recent observations, Berger rejects his former working hypothesis according to which the alpha waves of the electro-encephalogram were considered an expression of psychophysiologic action in the cerebral cortex. He now inclines toward the assumption (based on the results of experiments carried on with macaques by Dusser de Barenne and MacCulloch) that the alpha waves develop in the three lowest cell layers of the human cortex, the so-called corona radiata. He also has come to believe that many of the lesser, briefer oscillations of the electro-encephalogram are produced in the three uppermost cell layers of the cortex, the superficial zone. Numerous anatomic, physiologic and pathologic observations attest an especially close interrelation of the superficial zone and psychic activity. Berger has sought to establish this region as the place of origin of beta waves of from 11 to 24 angstroms. The importance of the beta waves for psychic function is evidenced by their increase under a diversity of circumstances in many mental disorders, in reaction states of the organism to certain alkaloids that influence cerebral function, and in any arrest of the attention with concomitant psychic phenomena, in fine, in any state of heightened brain action. Under the foregoing conditions the alpha waves, on the contrary, become comparatively scarce or disappear entirely. From his research in this field Berger arrived at the following conclusions. The sum total of physiologic and psychophysiologic activity in the cerebral cortex of man is expressed in the characteristic tension curve of the electro-encephalogram, which curve is the final result of the component action current originating in the particular nerve cell layers. The alpha waves of the electro-encephalogram develop in the corona radiata. They indicate a constant physiologic activity in the area, which persists even in sleep, in generalized cortical dysfunctions they exhibit manifest alterations. Certain beta waves from 11 to

24 angstroms in length, the source of which may well be sought in the cell layers of the superficial zone, parallel psychophysiologic activity within the cortex. These waves accordingly may be regarded as significant accompanying phenomena of psychic conditions.

Influence of Weather on Disorders of Eye

Intra-ocular pressure, especially that of acute glaucoma, and iritis rheumatica have heretofore been recognized as eye disorders conditioned by the weather. Dr. Hinrichs has recently demonstrated in the eye clinic of Greifswald University that meteorologic factors (the succession of atmospheric variation-strata) also influence herpes corneae. Cases of the latter disorder are most frequent in February and March. Other eye diseases the incidence of which exhibits a regular seasonal fluctuation are pneumococcal conjunctivitis and diplobacillary conjunctivitis. The first of these entities presents an easily observable spring peak and the suggestion of a summer peak. Diplobacillary conjunctivitis presents an autumnal peak. The influence of atmospheric variation-strata on the eye ought to be regarded as a sympathetic nervous reaction to as yet obscure conditions.

Marriages

- RAFAEL RODRIGUEZ-MOLINA, San Juan, Puerto Rico, to Miss Mirian Alberta Mehrof-Caballero of Bayamon, August 25.
WILLIAM BURTON CONNOLLY, Helena, Ark., to Miss Betsey Ross of Nashville, Tenn., in Sewanee, Tenn., August 21.
DONALD ANDREWS BRISTOLL, New Britain, Conn., to Miss Charlotte Emily Smith of Greenwich, September 11.
JAMES BUFORD JOHNSON to Miss Margaret Terry, both of Los Angeles, at Santa Barbara, September 25.
WILLIAM S. BETHEA to Miss Florence Emma Manning, both of Latta, S. C., in Charleston, October 11.
LEON P. FOX, San Jose, Calif., to Miss Cleo Odom of San Francisco, in Reno, Nev., September 11.
E. KING MORGAN, Brooklyn, to Miss Janet Flemming Potter of Moncton, N. B., Canada, August 11.
DEANE HUNDLEY JR., Beulaville, N. C., to Miss Sidney Davenport of Greenville, September 18.
JOHN R. CRITTENDEN, Elkton, Ky., to Miss Ora Crittenden at Morgantown, Ky., September 15.
SIMEON STANTON BAKER, La Grange, Ky., to Miss Ruth Giegendi in Louisville, August 12.
ALEX. B. SHIPLEY, Cookeville, Tenn., to Miss Virginia Gunn of Middlesboro, Ky., September 2.
RUSSELL G. HIGHTOWER, Moulton, Ala., to Miss Margaret Ross in Birmingham, October 2.
DAVID DREZ to Miss Hester Bingham, both of De Quincey, La., in Lake Charles, August 10.
JOHN FREDERICK CARY, Reedsville, Wis., to Miss Agnes Durlin of Chicago, October 9.
JOHN CONLEY, Fort Wayne, Ind., to Miss Carol Lorraine Fields of Winchester, July 17.
DWIGHT T. BOYHAM, Rockville Center, N. Y., to Miss Ruth Elizabeth Corbett, October 9.
EDWARD HERBERT JR. to Miss Virginia Piers Summey, both of New York, September 28.
OLAF M. HEIBERG to Miss Lois Shaffer, both of Minneapolis in St. Cloud, September 4.
THOMAS E. BROADIE, St. Paul, to Miss Marjorie Allen of Attica, Ind., September 7.
ROBERT F. DICKEY, Danville, Pa., to Miss Irene E. Brouse of Northumberland, June 15.
FELICIA D. SHLEPOWICZ, Chicago, to Mr. Joseph M. Koch of Granite City, Ill., in June.
PHILLIP C. HEMMING to Miss Janet R. Hawkins, both of Elgin, Ill., September 18.
DAVID J. ROBERTS, Akron, Ohio, to Miss Ellen Neff Evans of Alliance, August 17.
ABRAHAM J. COHEN, Philadelphia, to Mrs. Eugenie Hogan, October 8.

Deaths

Leonidas Le May Mial Ⓢ Morristown, N J, University of Pennsylvania Department of Medicine, Philadelphia, 1887, member of the American Laryngological, Rhinological and Otolological Society, fellow of the American College of Surgeons, past president of the Morris County Medical Society, at various times on the staffs of the All Souls Hospital and the Morristown Memorial Hospital, Morristown, and the New Jersey State Hospital, Greystone Park, aged 75, died, August 20, of cerebral hemorrhage and arteriosclerosis

Ernest Mammen, Bloomington, Ill., Rush Medical College, Chicago, 1884, past president of the McLean County Medical Society, fellow of the American College of Surgeons, instructor in surgical diagnosis, Medical Department, St. Johns University, Shanghai, China, and community director of health education for China, 1923-1924, served on World War examining board, surgeon to the Brokaw and St. Joseph hospitals, aged 81, died, August 22, of coronary thrombosis

Curt Herbert Krieger Ⓢ Louisville, Ky., University of Louisville School of Medicine, 1925, also a pharmacist, served during the World War, clinical assistant in otology, rhinology and laryngology at his alma mater, 1929-1936 on the staffs of the U S Marine Hospital, City Hospital, St. Joseph Infirmary, Norton Memorial Infirmary, St. Anthony's Hospital, Children's Free Hospital and Kosar Crippled Children Hospital, aged 55, died, August 30, of heart disease

Daniel Samuel Hatfield, Washington, D C, University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore, 1922, clinical instructor in medicine, George Washington University School of Medicine, 1923-1924, formerly director of the bureau of communicable diseases, Baltimore City Health Department, at one time connected with the U S Public Health Service, aged 40, died, August 5, of chronic myocarditis

Peter Harold Salter Ⓢ Norfolk, Neb., L R C S, Edinburgh, L R C P, Edinburgh and L F P S, Glasgow, 1885, a founder and fellow of the American College of Surgeons, past president of the Nebraska State Medical Association and Madison County Medical Society, and a founder of the Elkhorn Valley Medical Society, on the staff of the Lutheran Hospital, aged 75, died suddenly, September 17, of angina pectoris

Bradford Massey, Pocomoke City, Md., Medico-Chirurgical University of Philadelphia, 1915 member of the Medical and Chirurgical Faculty of Maryland, secretary of the Worcester County Medical Society served during the World War and in the U S Public Health Service, deputy state and county health officer, aged 48, died, August 3, of coronary thrombosis

Elijah Lumbria Mason Ⓢ Washington, D C., Columbian College Medical Department, Washington, 1901, fellow of the American College of Physicians, at various times on the staffs of the Garfield Memorial Hospital, Episcopal Eye, Ear and Throat Hospital and the Children's Hospital, aged 66, died, August 30, of arteriosclerosis and bronchopneumonia

Maurice Langon Hughes, Clarksville, Tenn., University of Nashville Medical Department, 1897, member of the Tennessee State Medical Association, president of the Black Patch Medical Society, past president of the Montgomery County Medical Society, on the staff of the Clarksville Hospital, aged 60, died, August 28, of paroxysmal tachycardia

Charles Amory Dexter, Columbus, Ga., Jefferson Medical College of Philadelphia, 1902, member of the Medical Association of Georgia and the Associated Anesthetists of the United States and Canada, aged 59, on the staff of the Columbus City Hospital, where he died, August 20, of acute nephritis, septicemia and pneumonia

Clyde Vernon Rice, Muskogee, Okla., St. Louis University School of Medicine, 1908, member of the Oklahoma State Medical Association, past president of the Muskogee County Medical Society, on the staff of the Oklahoma Baptist Hospital, aged 58, died, August 23, of coronary occlusion and arteriosclerosis

Charles Albert Wade, Chicago, Rush Medical College, Chicago, 1891 member of the Illinois State Medical Society, formerly professor of pediatrics at the Bennett Medical College, medical examiner for the Prudential Insurance Company, aged 71, died, August 18, of cerebral hemorrhage, hypertension and arteriosclerosis

Charles Sheppard Hearne, Swarthmore, Pa., Jefferson Medical College of Philadelphia, 1890, assistant demonstrator of histology, 1891-1894, and demonstrator of normal histology, 1894-1897, at his alma mater, member of the Medical Society

of the State of Pennsylvania, aged 74, died, August 17, of paralysis agitans

Harry Frederick Nolte Ⓢ Wheeling, W Va., Jefferson Medical College of Philadelphia, 1920, fellow of the American College of Surgeons, on the surgical staffs of the Ohio Valley General and Wheeling hospitals, aged 41, died, August 11, of a self-inflicted bullet wound in the head, at a camp near North Bay, Ont

William Frederick Morse, Saginaw, Mich., University of Vermont College of Medicine, Burlington, 1882, member of the Michigan State Medical Society, aged 79, formerly on the staff of the Saginaw General Hospital and St. Mary's Hospital, where he died, August 28, of injuries received in an automobile accident

George W Armes, Leitchfield, Ky., Hospital College of Medicine, Louisville, 1890, past president of the Grayson County Medical Society, formerly county health officer at one time medical director of the State Institution for the Feeble Minded, Frankfort, aged 71, died, August 30, of Parkinson's disease

Irving Foster Armstrong, Hudson, Mass., Tufts College Medical School, Boston, 1918, member of the Massachusetts Medical Society and the New England Obstetrical and Gynecological Society, served during the World War, aged 46, died, August 9, at Wells Beach, Maine, of coronary thrombosis

John Clement Justin, Palisade, N J., University of the City of New York Medical Department, 1893, at one time a member of the school board in West New York, member of the Medical Society of New Jersey, aged 68, died, August 22, in Monroe, N Y, of diabetes mellitus and myocarditis

Richard Hagan Miller Ⓢ Surg, Lieut. Commander, U S Navy, retired, Providence, R I., Jefferson Medical College of Philadelphia, 1913, entered the navy in 1916 and retired in 1926, served during the World War, aged 50, died, August 12, at Saranac Lake, N Y, of pulmonary tuberculosis

James William McGee Ⓢ Raleigh, N C., Bellevue Hospital Medical College, New York, 1888, at one time professor of diseases of children at the University of North Carolina School of Medicine, on the staff of the Rex Hospital, aged 70, died, August 10, of coronary occlusion

William Russell Scott Ⓢ Centralia, Wash., University of Toronto Faculty of Medicine, Toronto, Ont., Canada, 1908, past president of the Lewis County Medical Society, served during the World War, city health officer, aged 55, died, August 25, of coronary thrombosis

Samuel Bell Maxey, Angleton, Texas, Marion-Sims College of Medicine, St. Louis, 1896, member of the State Medical Association of Texas, president of the Brazoria County Medical Society, county health officer, died, August 30, in St. Joseph's Infirmary, Houston

Simon Volet, Liberty, N Y., Long Island College Hospital, Brooklyn, 1913, member of the Medical Society of the State of New York, aged 59, on the staff of the Maimonides Hospital, where he died, August 14, of pulmonary tuberculosis and tuberculosis of the kidney

Arthur Fay Warren, Chicopee Falls, Mass., New York Homeopathic Medical College and Hospital, 1897, for many years on the staffs of the Wesson Hospital and the Wesson Memorial Hospital, Springfield, aged 62, died, August 16, of a self-inflicted bullet wound

Frederick Winslow Rice Ⓢ Boston, University of the City of New York Medical Department, 1893, formerly police surgeon for Brighton and for many years school physician of Boston, aged 71, died, August 31, at Cape Porpoise, Maine, of coronary thrombosis

Edwin Winslow Knowles Ⓢ Greeley, Colo., College of Physicians and Surgeons of Chicago School of Medicine of the University of Illinois, 1906, served during the World War on the staff of the Greeley Hospital, aged 57, died, August 21, of coronary occlusion

Charles Albert Robbins, Dixon, Ill., College of Physicians and Surgeons, Keokuk, Iowa, 1892, veteran of the Spanish-American and World wars, aged 71, died, August 29, in the Veterans Administration Facility, Hines, of cerebral hemorrhage

Robert Phill Parriott Ⓢ Des Moines, Iowa, Drake University Medical Department, Des Moines, 1898, aged 64, at various times on the staffs of the Mercy Hospital and the Iowa Methodist Hospital, where he died, August 25, of coronary thrombosis

David Wilson McCarty, Berthoud, Colo., Jefferson Medical College of Philadelphia, 1892, member of the Colorado State Medical Society, also a druggist, aged 68, died, August 15, in the Presbyterian Hospital, Denver, of cardiovascular disease

Austin D. Heller, Bethlehem, Pa., Medico-Chirurgical College of Philadelphia, 1903, member of the Medical Society of the State of Pennsylvania, on the staff of St. Luke's Hospital, aged 57, died, August 24, of tumor of the spinal cord.

John Chrisostom Murphy, New York, John A. Creighton Medical College, Omaha, 1895, medical referee of the Veterans Administration, served during the World War, aged 65, died, August 18, in the Polyclinic Hospital, of coronary thrombosis.

Ralph Phillip Jones, St. Cloud, Minn., Hahnemann Medical College and Hospital, Chicago, 1915, served during the World War, on the staff of the Veterans Administration Facility, aged 46, died, August 21, of coronary occlusion.

William Harrison Parent, Lima, Ohio, Starling Medical College, Columbus, 1888, member of the Ohio State Medical Association, on the staffs of the Lima Memorial and St. Rita's hospitals, aged 75, died, August 29, of heart disease.

Frank Benjamin Hicks, Grand Marais, Minn., Rush Medical College, Chicago, 1899, also a minister, connected with the Indian Service, aged 76, died, in August, at the University Hospital, Minneapolis, of cerebral hemorrhage.

Anson Churchill Peckham, Fall River, Mass., Dartmouth Medical School, Hanover, N. H., 1878, formerly a member of the board of health, on the staffs of the Fall River General and Union hospitals, aged 81, died, August 29.

Eugene Burdett Dyson, Akron, Ohio, Cleveland College of Physicians and Surgeons, Medical Department Ohio Wesleyan University, 1898, on the staff of the Peoples Hospital, aged 64, died, August 13, of carcinoma of the rectum.

Harrie W. Kenfield, Hatteras, N. C., University of Michigan Department of Medicine and Surgery, Ann Arbor, 1906, aged 60, died, August 22, in the Albemarle Hospital, Elizabeth City, of carcinoma of the larynx.

James P. Letts, Romeo, Mich., Detroit Medical College, 1884, formerly village health officer, aged 80, died, August 22, in St. Joseph Hospital and Sanitarium, Mount Clemens, of injuries received in an automobile accident.

James Edward McDonald, Cohoes, N. Y., Albany (N. Y.) Medical College, 1899, formerly mayor and postmaster, on the staff of the Cohoes Hospital, died, August 14, of a skull fracture received in a fall.

William Christian Iuen, Kansas City, Mo., Medical College of Ohio, Cincinnati, 1883, member of the Missouri State Medical Association, aged 78, died, August 27, in the Trinity Lutheran Hospital, of heart disease.

John Allan Hodkins, Dayton, Ohio, Hospital College of Medicine, Louisville, Ky., 1903, member of the Ohio State Medical Association, aged 64, died, August 18, of arteriosclerosis and cerebral hemorrhage.

Albert De Bey, Orange City, Iowa, Rush Medical College, Chicago, 1884, formerly member of the state board of health, part owner of a hospital bearing his name, aged 76, died, August 5, of cardiac insufficiency.

Karl Vilhelm Arminen, Hancock, Mich., Rush Medical College, Chicago, 1907, member of the Michigan State Medical Society, on the staff of the St. Joseph's Hospital, aged 63, died, August 23, of myocarditis.

Hugo Lange, Brooklyn, College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1890, member of the Medical Society of the State of New York, aged 68, died, August 27.

John Wesley Sheffield, Binghamton, N. Y., Albany Medical College, 1886, member of the Medical Society of the State of New York, aged 79, died, August 9, of hypertrophy of the prostate and arteriosclerosis.

Thomas Harris Shipman, Providence, R. I., New York Homeopathic Medical College, 1876, formerly on the staff of the Homeopathic Hospital, aged 85, died suddenly, August 7, of carcinoma of the rectum.

George Henry Roth, Los Angeles, College of Physicians and Surgeons of San Francisco, 1909, head of the bureau of communicable diseases, county board of health, for many years, aged 60, died, August 20.

Robert Emory Peebles, Birmingham, Ala., Tulane University of Louisiana Medical Department New Orleans 1908, aged 52, died, August 24, in Boston, of arteriosclerotic and hypertensive heart disease.

Charles Wesley Higgins, Providence, R. I., University of Pennsylvania Department of Medicine Philadelphia 1894, for many years on the staff of the Rhode Island Hospital, aged 71, died, August 19.

William Robert Dendy, Pelzer, S. C., Atlanta Medical College, 1888, member of the South Carolina Medical Association, aged 75, died, August 27, in the Greenville (S. C.) Hospital, of heart disease.

Alfred H. Noster, New Braunfels, Texas, Rush Medical College, Chicago, 1892, formerly county health officer, aged 71, died, August 15, in a hospital at San Antonio, of carcinoma of the intestine.

Fred Abram Fowler, Tilton, N. H., University of Vermont College of Medicine, Burlington 1899, formerly member of the state legislature, aged 67, died, August 17, of chronic interstitial nephritis.

Morris S. Halperin, Brooklyn, University of Kharkov Faculty of Medicine, Russia, 1915, aged 44, died, August 18, in the Kings County Hospital of pulmonary tuberculosis and encephalitis.

Philip Newmark, Los Angeles, Friedrich-Wilhelms-Universität Medizinische Fakultät, Berlin, Prussia, Germany 1891, on the staff of the Lincoln Hospital, aged 68, died, August 18.

James Patrick Edward Scott, Philadelphia, Hahnemann Medical College and Hospital of Philadelphia 1903, also a pharmacist, aged 63, died, August 10, of coronary thrombosis.

Matthew Lee Custer, St. Louis, St. Louis University School of Medicine, 1919, member of the American Urological Association, aged 43, died, August 27, in St. Mary's Hospital.

Charles Hyneman Johnson, Camden, N. J., Jefferson Medical College of Philadelphia, 1884, member of the Medical Society of New Jersey, aged 73, died, August 31, of nephritis.

Grace Jones, Toledo, Ohio, Toledo Medical College 1900, formerly a member of the staff of the Kemper Military School, aged 72, died, August 9, of adenocarcinoma of the sigmoid.

Duke Goodman Mohler, Laurel, Miss., Louisville (Ky.) Medical College, 1894, member of the Mississippi State Medical Association, aged 67, died, August 11, of angina pectoris.

William Kirk Mathewson, Altoona, Pa., Hahnemann Medical College and Hospital of Philadelphia, 1920, also a pharmacist, aged 47, died, August 16, of angina pectoris.

Frank Orrin Hudnutt, Nespelem, Wash., Indiana Eclectic Medical College, Indianapolis, 1890, aged 82, died, August 7, in Spokane, of hypertension and cardiac decompensation.

Edward Warren Henderson, Detroit, University of Michigan Department of Medicine and Surgery, Ann Arbor, 1891, aged 74, died, August 27, of arteriosclerosis.

Oran Welborn Ross, Dallas, Texas, Baylor University College of Medicine, Dallas, 1913, member of the State Medical Association of Texas, aged 53, died, August 11.

H. Richard Hummel, Watertown, Pa., Hahnemann Medical College and Hospital of Philadelphia, 1887, aged 77, died, August 15, of bilateral bronchopneumonia.

James M. Goodman, Altheimer, Ark. (licensed in Arkansas in 1903), aged 69, died, August 21, in Pine Bluff, of chronic interstitial nephritis and cirrhosis of the liver.

Don La Motte Smith, Wilsonville, Neb., University Medical College of Kansas City, 1913, aged 46, was instantly killed, August 10 in an automobile accident.

Dorr Graves, Grinnell, Iowa, University of the City of New York Medical Department, 1871, aged 88, died, August 15, of cerebral hemorrhage.

Joseph Napoleon Hood, Monroe, La., Louisville (Ky.) Medical College, 1891, at one time bank president of Eros, aged 67, died, August 16.

William Adams Connell, Kansas City, Mo., Kansas City Homeopathic Medical College, 1900, aged 73, died, August 7, of coronary thrombosis.

John Joseph Hurley, Boston, Harvard University Medical College, Boston, 1903, aged 59, died, August 6, at Rye, N. H., of coronary thrombosis.

John Harris Smith, Floyd, Va., Medical College of Virginia, Richmond, 1934, aged 28, died, August 9, of a self-inflicted bullet wound.

Alexander MacDonald, Detroit, Detroit College of Medicine 1892, aged 73, died, August 4, in the Eloise (Mich.) Hospital, of heart disease.

Daniel Parris Albertville, Ala., Chattanooga (Tenn.) Medical College, 1900, aged 59, died, August 11, of pulmonary tuberculosis.

Oswin Fred Koch, Chicago, Bennett Medical College, Chicago, 1915, aged 54, died, August 25, of carcinoma of the rectum.

Bureau of Investigation

MISBRANDED "PATENT MEDICINES"

Abstracts of Notices of Judgment Issued by the Food and Drug Administration of the United States Department of Agriculture

[EDITORIAL NOTE The abstracts that follow are given in the briefest possible form (1) the name of the product, (2) the name of the manufacturer, shipper or consigner, (3) the composition, (4) the type of nostrum, (5) the reason for the charge of misbranding and (6) the date of issuance of the Notice of Judgment—which may be considerably later than the date of the seizure of the product]

Griggs Great Blood Tonic—R D Grigg Gainesville Ga Composition Essentially extracts of plant drugs including a laxative with alcohol (31.5 per cent) sugar and water, preserved with a small quantity of a salicylate. Misbranded because of incorrect labeling of alcohol content and because of fraudulent therapeutic claims as an alleged cure for blood kidney and nerve diseases dropsy female troubles etc.—[N J 24689 April 1936]

Blanton's Rheumatic Salve—Four Star Mfg Co Inc Detroit Composition Essentially a mixture of petrolatum and a fat, with a small amount of wintergreen. For rheumatism pneumonia catarrh etc. Fraudulent therapeutic claims—[N J 24690 April 1936]

A I R (Asthma Instant Relief)—Health Pharmaceutical Inc Chicago Composition Essentially a petroleum oil a small amount of wintergreen an emulsifying agent and 51.8 per cent of water. Fraudulent therapeutic claims—[N J 24692 April 1936]

Almotone—Almotone Chemical Co Colorado Springs Colo Composition Essentially extracts of plant drugs including a laxative alcohol and water. Fraudulently represented as a blood purifier general tonic and preventive—[N J 24699 April 1936]

Nuxaphen—Scott Drug Co, Charlotte N C Composition Essentially calcium manganese and magnesium glycerophosphates, extracts of plant drugs including nuxvomica alcohol (8.8 per cent) sugar and water. Misbranded because the label represented the alcohol content as 30 per cent and because the stuff was fraudulently represented as a tonic, blood purifier etc.—[N J 24700 April 1936]

Owens' VIII Veg—Bakers Research Co St Louis Misbranded because the name gave the false impression that it was a vegetable compound and the further statement, health bread represented that it was good for the health, whereas it contained a potentially deleterious ingredient phenolphthalein—[N J 24963 May 1936]

Father Mollingers Famous Herb Tea—Joseph R Hite trading as Mollinger Co Pittsburgh Composition Essentially ground drugs including senna leaves bearberry sassafras bark fennel lavender flowers, mandrake couch grass anise seed and elder flowers. For blood disorders liver and stomach troubles pimples etc. Fraudulent therapeutic claims—[N J 25029 July 1936]

Father Mollinger's Prescription for Female Complaints—Joseph R Hite trading as Mollinger Co Pittsburgh Composition Extracts of unnamed plant drugs. Fraudulent therapeutic claims—[N J 25029 July 1936]

Mollinger's Original White Salve—Joseph R Hite trading as Mollinger Co Pittsburgh Composition Essentially zinc oxide (15.5 per cent) horic acid (5.1 per cent) and a small proportion of carbohc acid in a petrolatum base. For eczema tetter itch pimples old sores ulcers etc. Fraudulent therapeutic claims—[N J 25029 July 1936]

Ditman's Sea Salt—A J Ditman New York Composition Common salt (98.3 per cent) calcium oxide (0.25 per cent) and traces of magnesium and sulfate compounds. For debility rheumatism weak joints and muscles etc. Fraudulent therapeutic claims—[N J 25031 July 1936]

Lutorol—Peck & Sterha Inc New York Composition Essentially oxyquinoline sulfate (0.87 per cent) horic acid a small proportion of an aluminum compound a gum glycerin and water. For protective feminine hygiene leukorrhea etc. Fraudulent therapeutic claims—[N J 25032 July 1936]

Vichy Water Powders (Artificial)—Charles Cassese Importing Co Paterson N J Composition Baking soda (93.6 per cent) common salt and epsom salt and small packages containing tartaric acid. For stomach liver and kidney troubles etc. Fraudulent therapeutic claims—[N J 25033 July 1936]

Mrs Olsen's Valuable Salve—Mrs G P Olsen Salve Co Bayonne N J Composition Essentially rosin and petrolatum. For cuts boils old sores eczema blood poisoning ulcers etc. Fraudulent therapeutic claims—[N J 25038 July 1936]

Ferro China Doria—Charles Cassese Importing Co Paterson N J Composition A compound of iron such as iron and ammonium citrate cinchona alkaloids alcohol (13.8 per cent) sugar spices and water. For anemia loss of appetite general debility etc. Fraudulent therapeutic claim—[N J 25033 July 1936]

Jaques' Little Wonder Capsules—Theodore W Hellmers East Orange N J Composition Essentially calcium carbonate (17 per cent) epsom salt cascara sagrada extract, and an extract of an unnamed pungent drug. For indigestion stomach catarrh heartburn headache etc. Fraudulent therapeutic claims—[N J 25035 July 1936]

Pyrol—Kip Corporation Los Angeles Composition (Tubes labeled Pyrol cans labeled Anti Pyrexol) Essentially petrolatum and zinc oxide with small amounts of carbohc acid salicylic acid and essential oils including wintergreen. For burns boils piles ulcers dandruff erysipelas carbuncles etc. Fraudulent therapeutic claims—[N J 25039 July 1936]

Vin Vigorans—LeCompte & Gayle Co Frankfort Ky Composition Essentially extracts of plant drugs including alkaloids of quinine and strychnine an iron compound glycerin alcohol and water. A nerve and blood tonic. Fraudulent therapeutic claims and misrepresentation that the stuff was a wine which it was not—[N J 25040 July 1936]

Hale's Phosphate of Soda Compound—J V Hale Co Inc Boston Composition Essentially sodium sulfate (39.9 per cent) baking soda and tartaric acid with small amounts of sodium phosphate (3.6 per cent) potassium sulfate and lithium citrate. For stomach and rheumatic troubles alcoholic excesses etc. Fraudulent therapeutic claims—[N J 25041 July 1936]

Goudy's Magic Liniment—Dr Goudy Remedy Co, Charleston Ill Composition Essentially a mixture of carbohc acid extracts of plant drugs including chrysophanic acid and chrysarobin and water with 17 per cent of alcohol. For eczema dog and snake bites lockjaw 'piles' etc. Fraudulent therapeutic claims—[N J 25044 July 1936]

Slp O—McCahe Drug Co Fargo, N D Composition Essentially plant drugs menthol, tar chloroform sugar and water. For coughs bronchial asthma catarrh hay fever etc. Misbranded because of objectionable claims—[N J 25043 July 1936]

Chalgonla Tablets—LeCompte & Gayle Co Frankfort Ky Composition In each tablet acetaminid (3.25 grains) baking soda (1.55 grains) and starch. For insomnia sciatica etc. Fraudulent therapeutic claims—[N J 25040 July 1936]

Walter's Radiant Hair Rejuvenator—Walter's Products Co Inc St Paul Composition Essentially lead acetate sulfur horic acid quinine glycerin water and perfume with 14.7 per cent of alcohol. Fraudulently represented to rejuvenate the hair and restore the original color remove dandruff, cure scalp trouble etc.—[N J 25045 July 1936]

Revigoro Tonic Health Tea—Universal Pharmacal Co, Chicago Composition Powdered plant drugs including senna buchu and pipsissewa leaves camomile and elder flowers anise seed snake root squaw root, cinnamon and wahoo barks and the roots of licorice gentian sarsaparilla podophyllum and sassafras. For genito-urinary and prostatic disorders obesity stomach and liver ailments etc. Fraudulent therapeutic claims—[N J 25046 July 1936]

Slim—Slim Sales Co, Inc Cleveland Composition Dinitrophenol, 1.197 and 1.115 grains respectively per tablet in two specimens examined. For obesity. Fraudulent representations—[N J 25042 July 1936]

Lygel—Lehn & Fink Inc Bloomfield N J Composition A jelly containing essentially water and a gum with small amounts of chloride a phenolic compound and perfume. For leukorrhea cervicitis, vaginitis cervical ulceration etc. Fraudulent therapeutic claims—[N J 25049 July 1936]

Malvitose—Malvitose Laboratories Inc, San Francisco Composition About 63 per cent of sugars about 9 per cent of protein 7.9 per cent of fat and small proportions of inorganic constituents. For malnutrition hyperacidity anemia stomach ulcers tuberculosis asthma eczema etc. Fraudulent therapeutic claims—[N J 25050 July 1936]

McNess Sarsaparilla and Burdock Compound—Furst McNess Co Freeport Ill Composition Essentially sugar water and alcohol (13.8 per cent) with small amounts of sodium and potassium iodide an iron compound and a laxative plant drug. Tonic. Fraudulent therapeutic claims—[N J 25051 July 1936]

Kastor Gems—Fort Wayne Drug Co Fort Wayne Ind Composition not stated except that it was contaminated with insect excreta larvae shells and other evidence of insect infestation. Represented as Pure Castor Oil in Delicious Chocolate Bon Bons. Adulterated—[N J 25054 July 1936]

Vegex Vitamin Yeast Candy—Fort Wayne Drug Co Fort Wayne Ind Composition not stated except that it was contaminated with insect excreta larvae shells and other evidence of insect infestation. Represented as Health Food. Aids Digestion Helps Preserve Teeth Stimulates Vigor. Fraudulent therapeutic claims also adulterated—[N J 25054 July 1936]

Nyalypus—Fort Wayne Drug Co Fort Wayne Ind Composition Essentially cresote eucalyptol sugars and water. For coughs bronchitis asthma etc. Fraudulent therapeutic claims—[N J 25054 July 1936]

Anti Headache Tablets—Furst McNess Co Freeport Ill Composition acetaminid (3.28 grains) caffeine baking soda and starch. Fraudulent therapeutic claims—[N J 25073 July 1936]

Requa's Charcoal Tablets—S & S Drug Co New Orleans La and Requa Mfg Co New York Composition not stated. For stomach troubles rheumatism malaria etc. Fraudulent therapeutic claims—[N J 25047 July 1936]

Correspondence

YAWS AND SYPHILIS

To the Editor—From August 1929 to August 1931, more than 1,000 autopsies were performed in Haiti under the observation of J H Chambers, Commander, Medical Corps, U S Navy. From this group, material from more than 200 cases showing some aortic change or evidence of yaws-syphilis in other organs was forwarded to Prof A S Warthin of the Department of Pathology at the University of Michigan for further study (Chambers, J H. Review of the Pathology Observed in 1,018 Postmortem Examinations in Haiti, *U S Nav M Bull* 34 285 [July] 1936).

Professor Warthin began the study, but owing to his death the work was continued by Professor Weller. After several years of careful study two reports have been made on this material. Weller, C V. The Pathology of the Aorta in Haitian Treponematosis, *Am J Syph, Gonorr & Ven Dis* 20 467 (Sept.) 1936, The Visceral Pathology of Haitian Treponematosis, *ibid* 21 357 (July) 1937.

Few papers of greater value with reference to the pathology of yaws-syphilis have appeared than the two papers of Professor Weller. It is regretted that *THE JOURNAL* passed over both these papers in its abstracts of current medical literature. In the meantime *THE JOURNAL* has reviewed at length a paper having to do with the inconclusive experiments on laboratory animals to prove a difference between yaws and syphilis (Turner, T B. Studies on Relationship Between Yaws and Syphilis, *Am J Hyg* 25 477 [May] 1937, abstr *THE JOURNAL*, August 7, p 462). I am therefore taking the liberty of offering certain abstracts from these two papers.

From the paper on the aorta

Of the 169 aortas which were available for our study 111 or 65.7 per cent showed histologic lesions which could not be differentiated from those which in the temperate zone we are accustomed to interpret as due to syphilis.

There was but one aorta in the entire series which presented a granulomatous process of a type which was not in accord with aortic lesions as seen in our local material but since persistent staining for spirochetes gave negative results we were forced to conclude the lesion was not treponematous.

From the 111 aortas showing histologic lesions which in the temperate zone we consider diagnostic of syphilis ninety-seven were selected as having foci of sufficient activity to warrant special staining for spirochetes. In this group treponemes have now been demonstrated in twenty-nine cases. In all of these the morphology of the organism was such as to justify its acceptance as *Treponema pallidum* (or pertenuis).

Among the aortas sent there were eleven from patients who were positive in respect to both genital scar and syphilitic history but were negative for yaws scar and yaws history. Nine of these aortas showed microscopic lesions considered characteristic of syphilis and treponemes were demonstrated in five. On the other hand fourteen aortas were included from patients who were positive for yaws scar and yaws history but negative for genital scar and history of syphilis. Eleven of these showed microscopic changes which in the temperate zone are considered characteristic of syphilis and treponemes were demonstrated in one. Because of the elements of chance distribution and technical difficulty a smaller percentage of success in staining organisms in the second group cannot be considered significant. [The italics are mine and will be referred to later.]

In the 169 patients there were twelve aortic aneurysms in addition to the one previously mentioned as believed to be due neither to syphilis nor to yaws.

The foregoing extracts are sufficient to show the character of this study of pathology of the aorta. The paper is illustrated with eight plates ($\times 140$) showing the pathologic changes and eight fields ($\times 2,500$) showing one or more of the treponemes. The second paper which appeared in July 1937, has to do with the visceral pathology, and of this I quote

Heart [158 hearts examined twenty-two of which showed histologic changes like those of syphilis]. Of the twenty-two positive hearts eighteen were associated with positive histologic findings in the aorta and in four of these treponemes were demonstrated in the aortas by silver staining.

Adrenals [152 organs examined]. Histologic changes like those of syphilis in the adrenals were associated with positive findings in the

aorta in forty-two of the forty-three cases. Such close parallelism must be significant. In eleven of these treponemes were demonstrated in the aortas. The successful staining of treponemes in two adrenals by the Warthin Starry cover glass method deserves special mention. There are very few reports in the literature of the demonstration of spirochetes in the adrenals other than in congenital syphilis of the newborn. Liver. That the criteria used for the recognition of lesions as syphilitic is sound is supported by the fact that seventeen of the eighteen livers which were found positive in this respect were associated with positive aortic lesions and four of them with aortas in which treponemes were demonstrated.

Pancreas. Portions of pancreatic tissue were available in 115 autopsies. In but six of these were changes found which in our material of local origin would have received a presumptive diagnosis of syphilis.

Brain and meninges [material from twenty-four autopsies examined]. Four of the twenty-four showed changes which can be diagnosed as syphilitic.

The latter paper is illustrated with five photomicrographs showing the histologic changes and the treponemes. The two papers conclude with practically the same statement

In order to avoid misunderstanding the statement made at the close of the report upon the aorta must be reiterated. In view of the impossibility of establishing an indubitable clinical diagnosis for each patient this study must not be considered as offering certain proof of either the unity or the duality of yaws and syphilis. It is intended only as an objective presentation of factual material. However one of three conditions must exist either yaws and syphilis are essentially the same disease or the group of patients here considered has an extremely high incidence of syphilis and the evidences of this disease alone are apparent in viscera or yaws and syphilis if different diseases produce identical visceral lesions.

Professor Weller's report constitutes an epoch in the history of yaws and syphilis. The report is fair and without a taint of bias. After reading the report of Commander Chambers and noting the meticulous care with which the clinical histories of the patients were censored and the patients' statements disparaged, it would seem that the two alternate conclusions of Professor Weller were inescapable. To many who have labored in the tropics and have seriously faced the necessity on administrative grounds of finding some solution of the vexed problem, these reports will constitute the final evidence of the unity of yaws and syphilis. Considering the fact that Haiti has long been an island supposedly saturated with yaws contracted in childhood or early life, and where as high as 70 per cent of the urban population show a positive Kahn reaction, it would be difficult to assume that among these 1,018 autopsies the special material selected for this long and laborious study of yaws failed to contain yaws and that the whole study is a mere travesty. The steadily increasing evidence of the "immunity" or inoculation resistance of the one disease against the other has some bearing on the first alternate conclusion. As for the second alternate conclusion I am persuaded that we ought never to forget that yaws-syphilis is an untreated disease, among an unclean people whose skins in the hot environment of the tropics are always subject to the symbiotic effect of other parasites on their unprotected lesions. Furthermore, competent observers have reported no differences in the pale parasite of syphilis that cannot be observed in the very thin parasite of yaws. Jonathan Hutchinson, among clinicians, decided for the unity of syphilis and yaws on clinical grounds alone.

Referring now to the quotation which I have placed in italics dealing with cases showing clear evidence of yaws history and yaws scars and with no history of syphilis, and considering the wide prevalence of yaws in Haiti and the quantity of this autopsy material for a study of yaws, I have no hesitation in affirming that these cases prove the unity of yaws and syphilis. Prominent physicians advocating the present campaign against syphilis have gratuitously slandered Christopher Columbus, one of the bravest sailors of all time by publishing to the world that he was a syphilitic on less—much less "indubitable evidence" (He had been to Haiti).

Professor Weller and Commander Chambers are to be congratulated on the character of the study.

R C HOLCOMBE M D, Upper Darby Pa
Captain M C, U S Navy, retired

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

PNEUMOCOCCIC ENDOCARDITIS

To the Editor—A woman aged 26 with one child living and well has pneumococcic endocarditis that came on five days after an appendectomy. I have isolated the pneumococcus by blood culture. Growth was excellent at the end of seventy-two hours; the morphology very characteristic and the organism gram positive. The Kahn test is negative. Sedimentation is markedly increased and the urine normal. The blood count is typical of an acute infection. The tonsils are out. X-ray examination of the teeth is negative and the chest is negative on physical and X-ray examination. There is a definite mitral systolic blow with a mitral regurgitation and some slight cardiac enlargement. She has been ill for five weeks now. There is a daily temperature rise to 103 F and a pulse between 140 and 160. I have not had an X-ray examination of the sinuses but the frontals and the antrums transilluminate well. There was no comment on the ethmoid. Some days there is no rise of temperature. Two weeks ago she suffered acute muscular pain and joint pain involving the right carpal and metacarpal joints, the right shoulder joint and the entire sacro-iliac joint and also the right ankle with swelling. This all subsided on large doses of salicylates and now she is free from pain. The patient has a secondary anemia now but no disturbance of the hematopoietic system. The liver and spleen are normal. There is no pleural rub. My treatment consists of absolute bed rest, a high caloric diet, iron and vitamins A, B and D and salicylates by mouth and also intravenously when a gastro-intestinal upset occurs. Is there anything else that I can offer the patient? Can one express a favorable prognosis? What relation if any did the appendectomy have to the present condition?

HENRY A. HARTMAN, M.D., Kankakee, Ill.

ANSWER—This is a most unusual situation. Acute bacterial endocarditis is almost always a complication of a bacteremia from some obvious source. In the case of the pneumococcus it ordinarily complicates pneumonia. The disease runs a rapid and fatal course without remission. It is assumed, therefore, that this must be a subacute bacterial endocarditis.

About 95 per cent of all cases of subacute bacterial endocarditis are caused by *Streptococcus viridans*. This leaves but 5 per cent to be distributed among several organisms, of which the pneumococcus is one. In addition to this a high percentage of the cases of subacute bacterial endocarditis are superimposed on an old rheumatic carditis, which apparently did not exist in this case. It is assumed that the appendectomy was uncomplicated, and if so it is difficult to see how it could have been involved, except as an innocent bystander.

There is no specific treatment for subacute bacterial endocarditis and because of its rarity no considerable series of pneumococcic endocarditis have been reported recently. It would seem logical to type this organism and use large quantities of serum if the organism is one that lends itself to serum therapy. Commercial serums against many of the types of pneumococci are available. The same precautions should be observed here that are observed in the use of the serum in the treatment of pneumonia. The prognosis is distinctly unfavorable.

DEFORMITY OF HEAD AFTER CHILDBIRTH

To the Editor—I have a patient 6 months old who has had a depressed skull laterally and posteriorly since birth. He was delivered normally, but the labor was long and dry. The mother is extremely nervous over the condition as the child's head appears much deformed. Is there anything surgically or otherwise that would offer some improvement?

PHILIP E. ZANFAGNA, M.D., Lawrence, Mass.

ANSWER—It is possible that such a misshapen head may be due to the effect of a contracted pelvis on the child's head during birth, though another possible cause would be a premature synostosis of the small sutures or a partial synostosis of the larger sutures.

If the closure and ossification are confined to the small sutures during the first months of life, the form and shape of the cranium are altered and its capacity is diminished. When the coronal and lambdoidal sutures are closed early the transverse diameter of the skull is diminished and the growth of the anteroposterior diameter is increased, constituting a so-called dolichocephalic skull.

When the coronal suture alone undergoes an early closure, an asymmetrical or distorted configuration of the skull occurs and this has been called plagiocephaly.

There may be other causes for a cranial asymmetry, for example the craniotabes of rickets which is a softening of the

flat bones, due to delayed ossification and calcification. The contour of the head may become misshapen as the result of compression of one portion or another of the softened vault of the skull. But this condition would be associated with other symptoms of rickets and could hardly be overlooked.

It is obvious from the foregoing that surgical treatment could not correct the deformity which already exists. The experience with craniectomy dates back to Lanelongue (about 1880), who advocated this operation for microcephaly. After a short period of popularity, the operation was abandoned.

A plastic operation performed on the skull would be hazardous, and the results would be disappointing, to say the least.

It should be mentioned, however, that mere asymmetry of the skull need not interfere with mental development, though on the other hand, if the cranial capacity is diminished, obviously cerebral growth would be retarded.

EPIDURAL INJECTIONS

To the Editor—Please inform me whether in giving epidural sacral injections any other substances besides procaine hydrochloride or a similar local anesthetic plus varying amounts of physiologic solution of sodium chloride have ever been used. I do know that the use of alcohol has been attempted but has been given up on account of dangerous results such as motor paralysis. What I should like to know particularly is whether such substances as paraldehyde, acetone or ether have been tried. Also what references could you give me in the matter.

EUGENE FROELICH, M.D., New York

ANSWER—There is little in the literature concerning injection into the sacral canal of the substances mentioned except physiologic solution of sodium chloride, especially when procaine hydrochloride has been dissolved in it. R. E. Farr (Sacral Anesthesia: Some Practical and Experimental Points, *Arch Surg* 12:715 [Oct] 1926) measured the quantity that could be introduced into the caudal canal until the epidural space was filled to a point at which the solution appeared at the foramen magnum and found the average amount to be about 120 cc. Alcohol has been injected intentionally and unintentionally. The results were not uniformly good enough to permit continuation of that practice. Some have attempted to incorporate procaine hydrochloride into an oily medium or into other mediums that would be less likely to be absorbed than water in the hope that the duration of anesthesia with procaine hydrochloride might thereby be extended. This is especially true in obstetric cases. Various substances have been injected unintentionally, and an extensive search of the literature might reveal case reports of the results of such injection. Some investigators have tried a few substances but have never reported their results in the literature, it would seem from this that they were not favorably impressed with the procedure.

GONORRHEA IN THE FEMALE

To the Editor—What constitute the microscopic diagnostic criteria for chronic or subacute gonorrhea in the female with involvement of Skene's glands and the cervix? What would be the microscopic picture after cure? What is the significance of pus cells alone in smears from the urethra and cervix? Given a case of chronic or subacute gonorrhea involving the cervix, Skene's glands and possibly Bartholin's glands, what treatment is indicated?

M.D. Massachusetts

ANSWER—The diagnosis of gonorrhea in the female genital tract is based on both microscopic and clinical observations. Bacteriologic evidence without clinical evidence of infection is rare, clinical evidence without bacteriologic confirmation is common. The discovery of gram-negative intracellular diplococci in smears made from the vaginal tract indicates the diagnosis. Unless the typically stained biscuit-shaped organisms are inside the leukocytes, the diagnosis is doubtful. To be absolutely certain as is necessary in research work or in medicolegal cases the physician must culture the organisms on a suitable medium such as Pelouze's. For ordinary office practice the smear suffices. It is extremely difficult to be sure that a woman is cured of gonorrhea if by cure is meant non-infectiousness. If after all clinical signs of active infection subside, gonococci are not demonstrable by smears or cultures repeated at intervals of two months for a period of twelve months, and if provocative stimulation (drinking sexual excitement) produces no clinical or bacteriologic evidence of disease, the patient is presumed to be noninfectious. Even so, the physician should beware of committing himself too definitely on this point. Pus cells alone in a smear from the urethra or cervix mean nonspecific urethritis (most often traumatic) or cervicitis. Subacute gonorrhea of the lower genital tract is best treated by complete rest in bed, sexual abstinence, avoidance of instrumental trauma and prohibition of irritating douches. Gonorrhea tends to be a self-limited disease and

often will remain localized if nothing is done to promote its ascent to the adnexa. The important point in treating acute gonorrhea of the lower tract is to avoid overtreatment. Forceful douching, the use of strong antiseptics, frequent instrumentation and digital examination almost certainly do more harm than good. Since the organisms are deeply embedded in the glands of the cervix, Skene's glands and Bartholin's glands, surface applications are useless. The vaginitis (except in children) is transitory. Heat applied to Bartholin's abscesses is comforting, later incision may be required. When the chronic stage is reached Skene's tubules may be fulgurated, Bartholin's glands excised, and the endocervical glands removed by electric coagulation or the Sturmdorf operation.

VACUOLES IN LENS A FORM OF CATARACT

To the Editor—I am a physician 30 years of age. About one year ago, after having worn glasses for about fifteen years with only occasional minor changes, my vision became distinctly worse. I also began to have frequent burning distress in the epigastrium which was only partially relieved by taking food or alkali. This distress was made worse by smoking. My third complaint which began at about the same time consisted of frequent bowel movements with a soft stool and occasional tenesmus. I have also been suffering with an easy fatigue and a desire to sleep in the early part of the afternoon. Consultation with an ophthalmologist disclosed that since the time I had seen him about two years before I had developed bilateral lenticular vacuoles. He suggested that I have a complete study with a possible metabolic disturbance in mind. His study revealed a blood pressure of 120 systolic 80 diastolic, pulse 68, red blood corpuscles 4,700,000, hemoglobin 88 per cent, white blood corpuscles 7,500, differential count normal, normal free and combined hydrochloric acid, basal metabolic rate minus 7, x-ray examination of chest negative, blood sugar combining power, urea nitrogen and creatinine normal, a moderately severe proctitis on sigmoidoscopic examination, a pylorospasm that was relieved after about a half hour of gentle massage and a marked intestinal hypermotility. There was no intrinsic gastric disturbance. The proctitis was relieved by local therapy. Sedatives by mouth and complete elimination of smoking relieved the epigastric symptoms temporarily but increased the sleepiness. Of late this epigastric burning has recurred. I have been taking small doses of alcohol, as liqueurs two or three times a day which has partially relieved me. Foreign protein fever therapy and intravenous calcium therapy were tried for a few weeks but produced no evident results. The vacuoles in the lenses are still present and I believe have increased in size. Can you offer any suggestions for further study or any ideas as to the etiology of these vacuolar changes?

M.D. New York

ANSWER—The vacuoles in the lenses technically constitute a cataract, but these are present in many lenses and often remain stationary all the rest of one's life; indeed, they may have been present before birth. They do not regularly interfere with good vision, there is no special difficulty in determining what is the best glass needed, nor is there difficulty in the use of the glass prescribed, though the opacities may interfere with vision when one is in either very bright or very dull light. In the bright light the pupil is small and if the opacities are mainly axial in position one may be annoyed by a "glare" due to the dispersion of rays of light going through the vacuoles.

There is no known definite relationship between the type of gastro-intestinal trouble described and the cataractous changes that have been found in the correspondent's eyes, and it is therefore incorrect to assume any relationship.

GLAUCOMA

To the Editor—What are the mechanics in acute and chronic glaucoma? What are the steps in anatomic changes that cause an eye to pass from normality to ordinary glaucoma and to acute glaucoma and what are the steps in the mechanics? Please omit name and address.

M.D. Pennsylvania

ANSWER—The aqueous humor, which forms in the ciliary processes, passes from the posterior chamber through the pupillary space into the anterior chamber and is drained off into the venous circulation through the spaces of Fontana in the pectinate ligament, a meshwork, that forms the inner wall of Schlemm's canal. Glaucoma never occurs in a normal eye.

In an eye with a minimal of normal outflow due to blocking of a portion of the normal exit anything that precipitates a further blocking can produce an acute attack of glaucoma. Fright or a sudden emotional strain, or a prolonged period in a dark room can cause a dilatation of the pupil. The thickening of the root of the iris that occurs with dilatation can cause the anterior surface of the iris to impinge on the pectinate ligament and cause a further reduction of outflow of aqueous and a rise of intra-ocular tension. Mydriasis from drugs can produce the same result in such an eye as one with a prodromal glaucoma but never in a normal eye.

If this state of blocking of the iris angle persists for a long time an anterior synechia, i.e., adhesion of the root of the iris to the posterior surface of the cornea, forms and causes a permanent blocking of outflow which is called chronic glaucoma.

Chronic glaucoma can also be produced by the accumulation of particles of pigment in the spaces of Fontana, which converts its normal filtering meshwork into an almost solid wall.

Congenital glaucoma or hydrophthalmos is due to the absence of the canal of Schlemm.

EPILEPSY WITH GENITO-URINARY SYNDROME

To the Editor—A well nourished and developed man, aged 31, single, has had no illness except seven years ago when he had three convulsions in fourteen hours and became unconscious during them. I did not see the patient until Jan. 10, 1937. Examination revealed the pupils equal and regular. Temperature, pulse, blood pressure, chest, heart and urine were negative. Nonprotein nitrogen was 30, sugar 60, hemoglobin 75 per cent. There was no speech defect and no Babinski reflex. The Wassermann reaction was negative. The eyes reacted to light and to accommodation. The prostate was slightly enlarged. There was no growth. The right knee jerk was very active, the left not quite so fast. There were marked tremors of the extended or relaxed fingers. He did not sway in the Romberg test. For eight months he has had pains in the lower part of the abdomen and extending down the inside of the legs to the knees. They are growing worse but are not severe enough for medication. For the past two months there has been frequent urination with no burning in ordinary amounts. One year ago he arose once during the night to urinate, now he rises two or three times. Eight years ago he worked out but after convulsions he has been kept at home to work. He is a farm boy and has always worked hard. He masturbates or did a few years ago. Please omit name.

M.D. Wisconsin

ANSWER—There are two conditions present in this case. One is a neurologic syndrome known as the convulsive state, i.e., epilepsy, and the other is a genito-urinary syndrome. The convulsive state is in all probability an idiopathic epilepsy. The parents should be questioned for a possible history of similar attacks of unconsciousness and convulsions during his infancy and early childhood. He should be placed on an anticonvulsant regimen such as sodium bromide starting with 13 Gm. (20 grains) three times daily. If after one week the patient has another convulsion the dose should be increased to 16 Gm. (25 grains) three times daily. When the amount of sodium bromide necessary to keep him free from convulsions is determined he should be kept on that dose for three years. He should be directed to take the medicine regularly. The patient should not drink any alcoholic beverages, should not climb heights, should not drive an automobile and should not swim. He can do all regular work on the farm. A lateral and antero-posterior roentgenogram of the skull should be made to rule out any abnormalities. Masturbation has no relationship to the convulsive state.

CEDAR POISONING

To the Editor—What is the possibility of cedar poisoning of the lungs predisposing to lung infections such as pneumonia and death? The patient referred to had been a clean up man and firing boilers in a single mill for two months. Cold weather came on and the patient caught cold. One week later he had bronchial pneumonia. In eight days he spit up small amounts of fresh blood and stained sputum. He gradually became weaker and sixteen days after the onset died very emaciated. The patient's mother claims grounds for suit because of cedar poisoning.

HAROLD L. HOPKE, M.D., Sedro-Wolley, Wash.

ANSWER—The term "exotic timbers" includes large numbers of woods some of which are definitely associated with a capacity for injuring exposed workmen, because of a content of alkaloids, free unsaturated resinous acids or etherial oil. In some instances severe systemic diseases may be produced but more often damage is limited to dermatoses. The list of poisonous woods includes cocobolo, cytisus, acacia, yew, juniper, satinwood, black ebony, boxwood, mahogany, redwood, rosewood, teak, tagayasan, sabicu and roko. Although cedars (*Juniperus virginiana*, *Librocedrus decurrens*) are classed as exotic woods, no information is available that exposure leads to other than dermatitis from a content of cedar oil or cedar resin. In many aspects of the wood industry a fair amount of dustiness is produced but some vegetable dust is quite incapable of producing any such state as is brought about by silica or asbestos. Nearly all wood workers suffer or may suffer from a trivial degree of irritation of the eyes and nasal passages resulting from the mechanical action of wood dust particles. Such irritation is probably not more serious for cedar dust than for pine or fir. It is conceivable that a state of sensitization may occasionally arise leading to repeated attacks of dermatitis or other anaphylactoid states from cedar dust just as is true for various other woods. However, it is not possible to entertain the theory that pneumonia may have been produced

in a patient because of some peculiar content of cedarwood dust, setting it apart from other wood dusts. In British Columbia the occupational disease compensation law provides coverage for red cedar poisoning in the lumbering industry but coverage is limited to cedar dermatitis. It is not known that any other country through specific mention in occupational disease laws has ever recognized cedarwood poisoning as a disease entity.

PROGRESSIVE ANKYLOSING ARTHRITIS OF SPINE

To the Editor—A woman aged 25 complains of pain and soreness extending almost the entire length of the spine. There is an obliteration of the normal curvature of the lumbar spine. She is unable to stand erect; she has to stand with her thighs and legs slightly flexed. She had inflammatory rheumatism eight years ago involving the right hip, knee and foot. This was complicated by endocarditis and at the present time there is mitral insufficiency. When she was 12 years of age her uncle hyperextended her back over his knee. At that time she was conscious of popping in her back and she fainted. She has been troubled with her back ever since. There has been a gradual stiffening and obliteration of the normal curvature of the back for the past eight years. At present with the patient under a deep anesthetic there is no motility in the lumbar or thoracic spine. Anteroposterior and lateral x-ray films show no involvement of the bodies of the vertebrae but the articular surfaces of the spinous processes are in various stages of involvement, some being completely obliterated by exostosis. A thorough examination reveals no source of focal infection. There is no involvement of other joints of the body. She has had two courses of intravenous stock streptococcus vaccine and many courses of massage with but little result. There seem to be two main problems in this case: one to restore normal posture and the second to stop further progress of the disease. I should like your opinion on whether it would be advisable or possible by means of open operation to loosen the joints of the spinous processes in the lumbar region sufficiently to establish a normal lumbar curvature, place the patient in a cast and allow it to ankylose in a normal posture. I should also like your opinion as to what treatment might be instituted to stop any further progress of the disease. The patient has a basal metabolism of plus 40. She has a slight enlargement of the thyroid is not troubled with excessive perspiration is not losing weight has no exophthalmos and has a fine tremor of the hands. Her blood pressure is 120 systolic, 40 diastolic and her pulse runs on an average of 84. This basal metabolic reading was taken four days after a general anesthetic. If one repeated examination the patient shows a high metabolism. Do you think thyroidectomy would have any influence on the arthritis? What effect may be expected on the arthritis from parathyroidectomy?

VERN W. RITTER, M.D., Seattle

ANSWER—The injury to the spine of this patient occurred at least five years before the onset of chronic pain and deformity. Her disability apparently dates from the attack of inflammatory rheumatism. This history suggests a progressive ankylosing arthritis of the lateral articulations of the spine.

There is no feasible operation for loosening the joints of the spine to correct deformities of this type. Some correction may be obtained by gradual extension with turnbuckles in a body and bilateral leg cast.

Vaccines in ankylosing arthritis of the spine have been of little if any value. After the deformity has been corrected as much as possible, a back brace should be applied. The diet should be rich in its calcium and phosphorus content, and vitamin D in high concentration should be added.

If repeated basal metabolic tests show this marked increase in the rate, thyroidectomy may be definitely indicated.

In spite of enthusiasm on the part of some clinicians there is no scientific evidence that a parathyroidectomy is of any value in the treatment of arthritis.

OBSTETRIC PELVIMETRY

To the Editor—What is the present status of obstetric pelvimetry? Is external pelvimetry considered to be of any value at all? Of what value are the x-rays and what particular x-ray technique is necessary? Just what procedure should be carried out in the case of a primipara before she is allowed to go into labor?

M.D. Ind

ANSWER—Studies in roentgen pelvimetry have proved that the use of external pelvic measurements for determining the size of the superior strait cannot be relied on with any degree of accuracy. It is probably true that most patients with large external measurements will possess adequate pelvic capacity and most patients with small external measurements will have limited pelvic capacity. Beyond this general statement it is unwise to classify pelvis or base operative procedure on such information. External measurements as applied to the pelvic outlet however are of greater value for here the bony parts to be measured can be readily palpated. The determination of the interspinous and diagonal conjugate diameters by vaginal touch is also useful but the true conjugate and transverse diameters of the superior strait can be determined only by roentgenometry. Under the title *Newer Aspects of Pelvim-*

etry" (*Am J Surg* 25:372 [Feb] 1937) Herbert Thoms has recently discussed the routine use of roentgenometry in primiparous patients and described the pelvic variations in 371 patients. He recommends two procedures: roentgenometry of the superior strait by the grid method and lateral roentgenometry at term. For each of these a single 10 by 12 film may be used, reducing the cost to a minimum. A description of the first procedure may be found in C. H. Davis's *Gynecology and Obstetrics* (Philadelphia, W. F. Prior Company, Inc., 1933) and the latter technique in the March 1937 issue of the *Yale Journal of Biology and Medicine* (Herbert Thoms and H. M. Wilson). There is no question that accurate knowledge of the dimensions of the bony birth canal is a valuable adjunct to obstetric procedure and that simplified and inexpensive techniques should make such knowledge available wherever scientific obstetrics is practiced.

PREGNANCY WITH DIABETES

To the Editor—A primipara in the eighth month of pregnancy, small and slim, weighing 85 pounds (39 Kg.) four months ago and 96 pounds (43.5 Kg.) now, is 30 years old. There are some signs of endocrine disturbance and pronounced hypertrophosis of the legs. During the last weeks I found slight glycosuria (green with the Benedict test), no albumin, and the blood pressure 115 systolic, 75 diastolic. The patient feels well. Her slight increase in weight is favorable. A small baby is desirable on account of the generally contracted pelvis (20-22-25 cm. but the diagonal conjugate normal). I recommended a carefully restricted diet for that reason. The blood status was normal. The blood sugar level could not be stated today. There was encountered difficulty in getting blood from the inconspicuous veins in this sensitive patient. I wish to learn whether the slight glycosuria is a simple one caused by the pregnancy (glandular or renal disturbances) and without clinical importance, which is what I think, or whether you think that a blood sugar as well as a urine sugar fermentation test has to be done and whether some danger might lurk behind the glycosuria?

M.D. New York

ANSWER—From the description it is quite possible that the reducing substance found in the urine does not represent a clinically significant disturbance of carbohydrate metabolism. However, in all fairness to the patient, further tests should be done to prove that such is the case. If the urinary reducing substance is shown to be dextrose, a quantitative estimation of the sugar in a twenty-four hour specimen of urine would enable one to gauge its clinical significance. If the amount of sugar excreted in twenty-four hours is significant, every effort should be made to obtain a blood sample for sugar determination. A microdetermination on 0.2 cc. of blood drawn from the finger tip can be done, if necessary. A comparison of the blood sugar level with the glycosuria will show whether the latter is a renal or a true diabetic phenomenon. If it turns out to be the latter, it is potentially dangerous and should be treated.

MOVING OF PATIENT AFTER CHILDBIRTH

To the Editor—Is there any danger in transporting a puerperal woman from the hospital to her home within the first twenty-four hours post partum? Specifically, the situation which prompts the query is this: There is in this city no hospital the nearest being some 20 miles distant. Many calls to homes entail a trip of 20 miles out into the country and consume many hours of otherwise profitable time which might be spent in the office. Often an entire day or night is spent for the most part needlessly at the bedside for fear to leave not knowing that one can be given timely notification to return or knowing be able to arrive in time. The practice of obstetrics is therefore becoming slowly but surely a thorn in my side which fact I regret. The hospitals in the neighboring cities will accept patients for twenty-four hours including the delivery room charges at a nominal rate which amount I would gladly deduct from the regular or usual fee in order to make it possible for the patients to go to the hospital for reasons and advantages to both patient and physician obvious and implied in the foregoing account.

M.D. California

ANSWER—There is much to be said in favor of adopting any expedient that would thus protect the patient and benefit the physician. However, there are many reasons why a patient should not be removed from a hospital to her home within the first twenty-four hours post partum, especially if this is a considerable distance. The danger of infection, either perineal or uterine, is the greatest of these, delayed post partum hemorrhage is another risk. Would not the distance to which the patient had been removed make it necessary for the medical attendant to limit his supervision and care of her during the remainder of her puerperium? His duties to her are by no means ended by her safe delivery.

A compromise in this situation outlined might solve the problem. The physician might assume the costs of the first day and the delivery room as he suggests the patient to pay her own hospital board and room for the ensuing eight or ten

days As a purely business proposition to the hospital, its management should see the advantage in cooperating by giving a nominal flat rate for these additional days, comparable to the favorable one mentioned for the first twenty-four hours

BILIRUBIN TEST OF LIVER FUNCTION

To the Editor—Please give me the details of the value of the bilirubin test as described by Louis J. Soffer (Present Day Status of Liver Function Tests *Medicine* 14: 185 [May] 1935). This is bilirubin used intravenously and it is asserted to be the most delicate test for determining impaired hepatic function. Will you please give me the details of the test as reported and its value or usefulness. I do not have the article available.

MARK H. SMITH, M.D. Hollywood, Calif.

ANSWER—The bilirubin test of liver function is one of a number described in the article mentioned. This test is a measure of the excretory function of the liver and is considered by many observers to be one of the earliest and most valuable indications of failing liver function. The test requires a fairly well equipped chemical laboratory and a knowledge of colorimetry. Its use is indicated as an aid to diagnosis in situations in which the diagnosis is not clear but there is a justifiable suspicion of cirrhosis of the liver, hepatitis, cholangitis, neoplasm of the liver or any condition that may cause destruction of liver tissue or suppress its function. It should not be employed when a hyperbilirubinemia is already present.

The following details of the test are quoted from Soffer's report:

The method used was described by Harrop and Barron (*J. Clin. Investigation* 9: 577 [Feb.] 1931), with the modification described by Soffer (*Bull. Johns Hopkins Hosp.* 52: 365 [May] 1933). A total amount of bilirubin equal to 1 mg. per kilogram of body weight is dissolved in 15 cc. of a one tenth molar solution of sodium carbonate which has previously been brought to the boiling point and then allowed to cool to 80° C. The bilirubin dissolves completely and a clear iodine colored solution is obtained. A control sample of oxalated blood is collected in a dry syringe and with the needle in situ the bilirubin is then injected intravenously. Oxalated samples of blood are obtained from the other arm within five minutes and again four hours after the injection. The concentration of bilirubin in the plasma is determined by means of the Ernst and Forster method (*Klin. Wchnschr.* 3: 2386 [Dec. 23] 1924).

The plasma is precipitated by redistilled acetone, which is used in different concentrations depending on the amount of bilirubin in the sample. Thus with the control and with the sample taken after four hours 2 cc. of acetone is added to 2 cc. of plasma while with 1 cc. of the plasma of the five minute sample 4 cc. of acetone is used. After the plasma and acetone mixtures are shaken the samples are centrifuged and filtered directly into a dry microcolorimeter cup and compared with a standard solution of 1/6000 potassium dichromate. The bilirubin content of the specimen taken five minutes after injection minus the bilirubin content of the control sample is considered as 100 per cent of the injected pigment. The percentage of bilirubin contained in the sample taken after four hours is then calculated after previous subtraction of the bilirubin contained in the control.

The following formulas are employed to determine the amount of bilirubin in the various samples:

Control and four hour specimens

$$0.329 \times 2 \text{ (dilution)} \times \frac{\text{reading of standard}}{\text{reading of unknown}}$$

Five minute specimen

$$0.329 \times 5 \text{ (dilution)} \times \frac{\text{reading of standard}}{\text{reading of unknown}}$$

The upper limit of normal retention is from 5 to 6 per cent in four hours.

TELLURIUM POISONING

To the Editor—A young Portuguese had severe abdominal pain with marked rigidity and signs of mild shock. He was found to have tellurium poisoning. He was observed for eleven weeks. Can you furnish me with any information regarding this condition especially as to treatment, prognosis and evaluation of disability. The case is a remarkably interesting one and I purposely have not gone into details because it is to be fully reported by the physicians who treated the case and did all the laboratory work at Newark City Hospital.

ANTHONY AMBROSE, M.D. Newark, N. J.

ANSWER—Tellurium poisoning and particularly industrial tellurium poisoning is so rare that its actuality is sometimes doubted. Its rarity is reflected in the fact that in the cumulative index of the *Journal of Industrial Hygiene* this item does not appear between the years 1922 and 1936. However it is generally held that a disease entity may be traced to tellurium as the specific cause. The principal manifestations are diminished flow of saliva, suppressed perspiration, insomnia and a persistent odor of garlic on the breath. It is stated that as little as 510,000 mg. of tellurium oxide will communicate to the breath the odor of garlic. While any compound of tellurium may be toxic, it is established that tellureted hydrogen is perhaps more active than any other compound and that its action may be dissimilar to other compounds in that it acts as a powerful hemolytic agent.

Dogmatic statements as to the treatment, prognosis and disability of tellurium poisoning are unwarranted because of the limited number of cases in the literature available for study. Treatment demands prompt removal from additional exposure. Pilocarpine has been used to counteract the dryness of the skin and mouth. Diuresis and catharsis are advocated. Hydrochloric acid may be administered orally to replace the deficiency of acid secretion. Chiefly the treatment is symptomatic.

Based on the experience with tellurium poisoning in industry, prognosis as to complete and prompt recovery is good. In animal experiments, large doses of tellurium have led to destruction of the mucous membrane of the gastrointestinal tract, intestinal hemorrhage, hyperemia of all abdominal organs, a parenchymatous nephritis associated with hematuria, and albuminuria. More extensive information may be found in:

Occupation and Health International Labour Office, Geneva, 1934, p. 1009.

Mead, L. D. and Gies, W. J. Physiological and Toxicological Effects of Tellurium Compounds. *Am. J. Physiol.* 104: 149, 1902.

Shie, M. D. and Deeds, F. E. The Importance of Tellurium as a Health Hazard in Industry. *Pub. Health Rep.* 35: 939 (April) 1920.

PIGMENTED NEVI OR SEBORRHEIC WARTS

To the Editor—What is the usual course of pigmented nevi? A patient past 70 years of age is raising a crop of them on his back between the shoulders. One nevus has existed for a number of years; its dimensions are about 2 cm. long, 1.2 cm. wide and from 2 to 3 mm. in height. It is sessile, of a leathery feel, dry and smooth and has been and is at present quiescent except for an apparent deepening of the black pigment. Of recent occurrence three more, a few centimeters apart, have started as small pinkish spots coming up consecutively becoming elevated above the skin growing visibly and darkening. None are pedunculated. Textbooks make short references, e.g., stating that they appear at any age, show no retrogression or spontaneous riddance and are usually benign. Half hearted advice is given to let them alone unless sudden accelerated growth, change in coloration, bleeding, pain or breaking up and spreading occur when a malignant condition may develop. What is the nature of the tissue? Can its development be checked? The growths are unsightly and the patient worries over the possibility of increasing numbers. Does surgical removal subject him to the risk of subsequent change to malignancy? Is carbon roentgen or radium therapy thus threatening too? One young dermatologist in a kind of European manner, spoke of scraping the nevi away. Would you kindly advise me?

M. D. Illinois

ANSWER—In all probability these growths, occurring on the trunk of a patient beyond middle life, increasing locally with considerable rapidity, becoming leathery and dark brown as they age, are not pigmented nevi but seborrheic warts. On close inspection, tiny, flat topped, smooth, skin colored wartlets may be found in the same neighborhood, closely resembling young verrucae vulgares. These seborrheic warts favor the covered parts, occur usually on the trunk of adults, and some times propagate rapidly so that hundreds may be counted, the ill defined patch spreading peripherally. When fully developed they sometimes closely resemble nevi but on curettage are much more brittle, breaking easily and leaving a rough surface with bleeding points. Histologically they are characterized by a complicated acanthosis with many contorted, interpapillary pegs and papillae, cross sections of the papillae and numerous epithelial pearls giving a plum pudding-like appearance to the epithelium. The border between epithelium and corium is clearly defined.

Curettage, followed by cauterization or freezing with carbon dioxide snow, will destroy the growths. Others may develop and require later treatment, or their growth and spread may cease. They seldom become malignant.

OBSTETRIC PROBLEM IN WOMAN WITH HEART DISEASE AND HYPERTENSION

To the Editor—I was recently called to see a primipara and found her in hard labor with the right arm prolapsed through the vulva. The blood pressure was 180 systolic, 110 diastolic and the pulse 140 per minute. A regular slight cyanosis was present and there were cardinal signs of decompensation and exhaustion. There was generalized edema of the lungs with many moist rales and a respiratory rate of 34 per minute. The urine showed four plus albumin. What was the proper treatment in this case?

M. D. Louisiana

ANSWER—Many factors enter into the choice of treatment in a case like that described. The serious condition of the patient would hinder any extensive operative procedure. Treatment should at first be directed toward improving the general physical condition. This should consist of the administration of small amounts of hypertonic dextrose solution intravenously (from 100 to 200 cc. of 50 per cent solution), morphine and if necessary a cardiac stimulant. When the general condition of the patient has improved the termination of the labor can be undertaken.

The choice of treatment will depend on the size of the pelvis, the state of the cervix and the condition of the baby. In the event that the cervix is sufficiently dilated to allow for manipulation and the baby is dead, the safest procedure for the patient is a destructive operation. The prolapsed hand and forearm can be thoroughly cleansed and by means of traction on this extremity a good exposure of the chest can be obtained. The ribs presenting can be cut and the soft tissues of the chest and abdomen eviscerated. One can now pull down one or both feet and finish the extraction by doing a craniotomy on the aftercoming head. Some anesthesia will be required for this procedure.

In the event that the baby is alive, it should be given some consideration. However, an attempt to deliver a live baby will result in an increased hazard to the patient. Under deep anesthesia sufficient relaxation of the uterus can usually be obtained to enable one to pull down one or both legs. This will usually result in the prolapsed arm being automatically pulled upward into the uterus. If dilatation of the cervix is not complete, the extraction need not follow the completion of the version but complete dilatation should be awaited.

The serious condition of the patient and the increased hazards of infection due to prolapse of the arm through the vulva would preclude any question of cesarean section.

MYXEDEMA OR EXOPHTHALMOS AFTER THYROID RESECTION

To the Editor—A white married man aged 55 weighing 135 pounds (61 Kg.) a storekeeper came to me with the complaint of pronounced symmetrical swelling of both eyelids of five months duration causing him considerable annoyance and embarrassment. Questioning revealed that about a year ago he had had a thyroidectomy performed for what was apparently an exophthalmic goiter. He states that postoperatively he improved considerably and gained weight and strength until about five months ago when his eyelids began to swell. The past history and family history did not reveal anything of significance. Physical examination showed a marked symmetrical nonpitting edema of both eyelids a fine tremor of both hands and moderate exaggeration of reflexes. Otherwise there were no gross abnormalities. The laboratory procedures which included a urinalysis blood count and differential count Kahn and Wassermann tests a roentgenogram of the chest and an electrocardiogram were negative. A basal metabolism determination showed a reading of plus 34, a rather confusing factor in view of the fact that he has been taking compound solution of iodine since his operation five drops twice daily. The condition is apparently not due to angioneurotic edema conjunctivitis glaucoma or Bright's disease. I have advised a check on the basal metabolism reading and am considering incipient myxedema. Your opinion and suggestions as to treatment would be greatly appreciated.

M D Illinois

ANSWER—Myxedema is of course a possibility that must be considered. But the question does not mention whether or not there is any exophthalmos and if so whether or not it is increasing. There are a few cases in which exophthalmos develops in the course of one to five years after a well performed thyroidectomy. The basal metabolism in such cases is not a constant and may even be in the minus column. If the second basal reading is still high, it might be well to consider roentgen therapy to the thyroid in addition to administration of compound solution of iodine.

TREATMENT OF SYPHILIS

To the Editor—A healthy looking married woman aged 24 with no history or clinical symptoms of syphilis consulted me for the relief of sterility. Examination disclosed chronic ulcerative cervicitis and a four plus blood Wassermann reaction. I administered neoarsphenamine a bismuth compound mercury and mixed treatment for two years giving the usual doses at suitable intervals continuously. The cervix healed promptly but the menses grew scanty. The Wassermann reaction remained four plus for about twelve months and then gradually diminished in the strength of reaction to negative at the end of the second year. After three months of rest from all treatment the Wassermann reaction again showed two plus. Is the patient clinically cured? If so why the return of the positive Wassermann reaction? What treatment should be pursued further? Why the almost complete suppression of menses in a few months after the treatment was begun? I curetted the uterus at the beginning. Could this have caused the change in the menses? During the three months rest period I gave injections of theelin. Could these have caused the Wassermann reaction to show plus again?

M D Illinois

ANSWER—It is not possible to say that this patient has been adequately treated for syphilis, because the number of doses and the amounts of the various drugs are not given. It appears probable that she is not clinically cured and that she needs more treatment with arsenic and preparations of a heavy metal, preferably bismuth. No mention is made of the examination of the spinal fluid. This should be done. The menstrual change

was probably caused by the curettage and not the antisyphilitic treatment. It does not seem possible that the injections of theelin could have had anything to do with the return of the positive Wassermann reaction.

UNILATERAL ERYTHEMA OF FACE IN INFANT

To the Editor—A baby girl 10 months old was delivered with a mid forceps operation and did not show any ill effects from it. The cry was spontaneous the baby fed well and there was no evidence of any birth injury. The baby has since been in good health the weight and length being up to standard and the general physical examination negative. However when the child was about 3½ to 4 months of age the mother first began to notice a red flush on the right cheek and ear, which has been present daily ever since. This is an erythema not of the blotchy type but it covers the whole cheek and ear and looks as though the child had been exposed to the cold air for a time. The left cheek has never been thus affected. This is more noticeable after the child has been up and about for a while or has exercised by crawling so that there are times during the day when the cheeks appear about the same. The child sleeps on both sides and as far as I can find out there is no clothing or other irritant that is causing this. What would be your opinion as to the etiology of this marked difference in the two sides of the face? If it is due possibly to a nerve injury at birth what is the prognosis? Can you suggest anything further in order to make a diagnosis?

DRAPER LONG, M D, Mason City Iowa

ANSWER—Discovery of the cause of the unilateral erythema of the face described in this question would necessitate a further inquiry into the history of the infant.

Erythema in its simplest form is usually a vasomotor disturbance. It occurs frequently in infants and children and is due to the instability of the vasomotor system. Such an erythema in an otherwise healthy infant may be caused by crying, by pressure from lying on the cheek, by sunburn from sunrays or quartz lamps, and by frost-bite from exposure to cold. A child sensitive to wool or silk might by lying on a pillow or blanket of such material show an erythema of the cheek.

Similarly, some food product to which the infant is sensitive might cause such an erythema. Foods introduced at about the fourth month, such as cereals, vegetables, orange juice or cod liver oil, might be suspected. Finally, the rash might not be a true erythema but a diffuse hemangioma which became noticeable at about the fourth month of life.

NODDING SPASM OR HEAD NOD

To the Editor—A woman aged 59 the wife of a minister has complained of a tremor of the head nodding in character, for the past several months. Associated with this is a left sided tinnitus most apparent while lying in bed. The neck muscles feel stiff. Examinations are essentially negative from an objective point of view except that her blood pressure is 158 systolic 88 diastolic. She is very nervous and worries a great deal about the tremor because her mother had a similar condition during the latter years of her life and she wonders whether a similar state of affairs is going to exist in her for the rest of her life.

M D Ontario

ANSWER—The patient has what is known as "nodding spasm" or "head nod." This condition is due to either one of several conditions. These are (1) senile nod associated with cerebral arteriosclerosis, (2) familial head nod and (3) head nod due to a cerebellar tumor. The prognosis in the first two is poor, so that if there is no objective evidence of any cerebellar tumor the head nod of the patient will in all probability remain as it is or increase in amplitude.

MEASURING BLOOD PRESSURE

To the Editor—In taking blood pressure in a person with variation of pulse volume is it correct to take the systolic reading at the point where one begins to hear a few beats (for example only one in three beats is heard) or where all the beats are heard?

E W Young M D, Cambridge N Y

ANSWER—The systolic tension in pulsus alternans, whether the alternation in force is regular or irregular, is variable with the different cardiac contractions. Certainly the point at which one hears the first sounds should be taken as the level of the maximum systolic tension and the pressure at which all the pulsations are first heard as the minimum systolic tension. In these instances the diastolic tension is rarely variable to any appreciable degree. In recording the arterial tension in such cases the systolic tension is best recorded as being within a range rather than as a single figure, for example 180 140/105. The finding of fluctuating pulse pressure such as described is evidence of grave cardiac disease and one must be more concerned with the cardiac capacity than with the exact momentary level of the systolic tension.

Medical Examinations and Licensure

COMING EXAMINATIONS

STATE AND TERRITORIAL BOARDS

Examinations of state and territorial boards were published in THE JOURNAL November 13 page 1660

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS *Parts I and II* Examinations will be held in all centers where there is a Class A medical school and five or more candidates who wish to write the examination Feb 14 16 May 9 11 (limited to a few centers), June 20 22 and Sept 12 14 Ex Sec, Mr Everett S Elwood 225 S 15th St Philadelphia

SPECIAL BOARDS

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY *Written examination for Group B applicants will be held in various cities throughout the country in April Oral examination for Group A and B applicants will be held at San Francisco in June* Sec Dr C Guy Lane 416 Marlboro St Boston

AMERICAN BOARD OF INTERNAL MEDICINE Examinations will be held in various centers of the United States and Canada Feb 14 Final date for filing applications is Jan 1 Chairman Dr Walter L Biering 406 Sixth Ave Suite 1210 Des Moines Iowa

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY *Written examinations and review of case histories for Group B candidates will be held in various cities of the United States and Canada, Feb 5 Applications must be filed at least sixty days prior to date of examination General oral clinical and pathological examinations for all candidates (Groups A and B) will be conducted in San Francisco June 13 14 Application for admission to Group A examinations must be on file before April 1* Sec Dr Paul Titus 1015 Highland Bldg Pittsburgh (6)

AMERICAN BOARD OF OPHTHALMOLOGY San Francisco June 13 All applications and case reports in duplicate must be filed at least sixty days before the date of examination Sec Dr John Green 3720 Washington Blvd St Louis Mo

AMERICAN BOARD OF ORTHOPAEDIC SURGERY Los Angeles Jan 14 15 Sec Dr Tremont A Chandler 6 N Michigan Ave, Chicago

AMERICAN BOARD OF OTOLARYNGOLOGY San Francisco June 10 11 Sec Dr W P Wherry 1500 Medical Arts Bldg Omaha

AMERICAN BOARD OF PATHOLOGY New Orleans Dec 24 Sec Dr F W Hartman Henry Ford Hospital Detroit Mich

AMERICAN BOARD OF PEDIATRICS New Orleans Nov 30 Sec Dr C A Aldrich 723 Elm St Winnetka Ill

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY New York Dec 29 30 Sec Dr Walter Freeman 1028 Connecticut Ave NW Washington D C

AMERICAN BOARD OF RADIOLOGY San Francisco June 10 12 Sec Dr Byrl R Kirklin 102 110 Second Ave S W Rochester Minn

Connecticut July Examinations

Dr Thomas P Murdock, secretary, Connecticut Medical Examining Board, reports the written examination held at Hartford, July 13-14, 1937 The examination covered 9 subjects and included 70 questions An average of 75 per cent was required to pass Thirty-seven candidates were examined, 23 of whom passed and 14 failed The following schools were represented

School	PASSED	Year Grad	Per Cent
Yale University School of Medicine	(1931)	75	
Tulane University of Louisiana School of Medicine	(1935)	83.2	
University of Maryland School of Medicine and College of Physicians and Surgeons	(1937)	76.3	77.4
Boston University School of Medicine	(1936)	78.3	
Harvard University Medical School	(1934)	75	76.5
Tufts College Medical School	(1936) 75.8 *	(1937) 77.4	78.5
St Louis University School of Medicine	(1936) 78.8	(1937)	75
Columbia University College of Physicians and Surgeons	(1937)	85.6	
Long Island College of Medicine	(1936)	78 *	
New York University College of Medicine	(1937)	81.5 *	
University of Vermont College of Medicine	(1935) 83.9	(1937)	80.5 *
Marquette University School of Medicine	(1937)	75	
McGill University Faculty of Medicine	(1934)	84.5	

School	PASSED	Year Grad	Per Cent
Friedrich Wilhelms Universität Medizinische Fakultät Berlin	(1924)	75.7†	
Ludwig Maximilians Universität Medizinische Fakultät München	(1923)	75†	

School	FAILED	Year Grad	Per Cent
Georgetown University School of Medicine	(1934) 68.3	(1937)	72.6
Tufts College Medical School	(1936) 64.5 72.5	(1937)	70.1
St. Louis University School of Medicine	(1933)	70.8	
Creighton University School of Medicine	(1936)	72	
Columbia University College of Physicians and Surgeons	(1918) 63.8	(1932)	66.3
Medical College of Virginia	(1936)	72.4	
Regia Università degli Studi di Roma Facoltà di Medicina e Chirurgia	(1934) 67.9	70.5	
Regia Università di Napoli Facoltà di Medicina e Chirurgia	(1936)	71.4†	
Osteopath			

Thirty-three physicians were successful in the oral examination for endorsement applicants held at Hartford, July 27 The following schools were represented

School	PASSED	Year Endorsement	Grad of
Yale University School of Medicine	(1933) (1934) * (1935) (1936 2) \ B M Ex	(1932)	New Jersey
Georgetown University School of Medicine	(1932)		

Loyola University School of Medicine	(1930)	Illinois
Rush Medical College	(1919) (1931)	Illinois
School of Medicine of the Division of the Biological Sciences	(1935) \ B M Fx	(1927) New York
University of Kansas School of Medicine	(1931)	Kansas
University of Louisville School of Medicine	(1933)	Kentucky
Johns Hopkins University School of Medicine	(1930)	B M Fx
Harvard University Medical School	(1934) \ B M Ex	
Tufts College Medical School	(1920)	Massachusetts
University of Michigan Medical School	(1936) \ B M Ex	(1932) Michigan
Columbia University College of Physicians and Surgeons	(1934) Ohio (1928)	(1935) \ B M Fx
Cornell University Medical College	(1933)	(1934) \ B M Ex
Long Island College of Medicine	(1936) \ B M Ex	(1920)
University and Bellevue Hospital Medical College	(1924)	New York
University of Rochester School of Medicine	(1934)	New York
University of Oregon Medical School	(1934)	Washington
University of Vermont College of Medicine	(1934)	New York

* License has not been issued

† Verification of graduation in process

‡ Average grade not reported Examined in surgery

Michigan June Examination at Ann Arbor

Dr J Earl McIntyre, secretary, Michigan State Board of Registration in Medicine reports the examination held at Ann Arbor, June 10-11, 1937 Ninety-nine candidates were examined all of whom passed The following schools were represented

School	PASSED	Year Grad	Per Cent
College of Medical Evangelists	(1937)	83.2	
Stanford University School of Medicine	(1937)	86.1	
Loyola University School of Medicine	(1937)	81.5	
Northwestern University Medical School	(1937)	84.7 *	
Rush Medical College	(1936) 82.4 *	(1937)	83
School of Medicine of the Division of the Biological Sciences	(1937)	85 *	
Johns Hopkins University School of Medicine	(1937)	81.7 *	
Boston University School of Medicine	(1936)	82.8	
Harvard University Medical School	(1933)	85.3	
University of Michigan Medical School	(1935) 80 * (1936) 81.1 * 87.5 (1937) 83.3	(1933)	85.6 *
80.5 * 80.6 * 80.7 * 80.9 * 81 * 81.1 * 81.3 * 81.5 * 81.6 * 81.7 * 82.1 * 82.2 * 82.4 * 82.6 * 8.6 * 82.6 * 83 * 83.2 * 83.3 * 83.4 * 83.4 * 83.4 * 83.5 * 83.6 * 83.7 * 83.8 * 83.9 * 83.9 * 84 * 84.1 * 84.2 * 84.4 * 84.5 * 84.6 * 84.6 * 84.7 * 84.8 * 84.8 * 84.9 * 84.9 * 85 * 85.2 * 85.3 * 85.4 * 85.4 * 85.8 * 85.9 * 86 * 86.1 * 86.2 * 86.5 * 86.5 * 86.7 * 87 * 87.1 * 87.1 * 87.8 *			
University of Minnesota Medical School	(1937)	81.1	
Washington University School of Medicine	(1935)	84.8	
University of Nebraska College of Medicine	(1929)	82.4 *	
(1936) 79.5			
University of Oregon Medical School	(1916)	84.4 *	
Jefferson Medical College of Philadelphia	(1935)	85.5 *	
University of Wisconsin Medical School	(1937)	80.6	

* License has not been issued.

Michigan June Examination at Detroit

Dr J Earl McIntyre secretary, Michigan State Board of Registration in Medicine, reports the examination held at Detroit June 10-11, 1937 Ninety-two candidates were examined, all of whom passed The following schools were represented

School	PASSED	Year Grad	Per Cent
College of Medical Evangelists	(1936)	84.6 *	
Georgetown University School of Medicine	(1936)	87.1	
Loyola University School of Medicine	(1937) 77.2 82.1	83.8	
Northwestern University Medical School	(1935)	85.8	
Rush Medical College	(1936)	81.4†	
Harvard University Medical School	(1934)	87.4	
Wayne University College of Medicine	(1937)	71.5†	
78.5† 78.8† 79.1† 79.9† 80.1† 80.1† 80.2† 80.2† 80.4† 80.5† 80.9† 81.1† 81.2† 81.3† 81.3† 81.5† 81.5† 81.6† 81.9† 82† 82.2† 82.2† 82.3† 82.3† 82.4† 82.5† 82.6† 82.6† 82.8† 82.8† 83† 83.1† 83.1† 83.1† 83.1† 83.2† 83.2† 83.3† 83.3† 83.3† 83.5† 83.6† 83.6† 83.7† 83.7† 83.9† 84† 84.1† 84.1† 84.2† 84.3† 84.5† 84.6† 84.8† 84.8† 85† 85† 85.1† 85.1† 85.2† 85.3† 85.5† 85.6† 85.7† 85.8† 85.8† 85.9† 87.7† 88.1†			
Creighton University School of Medicine	(1937)	79.1	
Duke University School of Medicine	(1935)	85.3	
Medical College of Virginia	(1937)	82.7	
Marquette University School of Medicine	(1935)	84.5	
University of Alberta Faculty of Medicine	(1935)	81	
Queen's University Faculty of Medicine	(1932)	87.9 *	
University of Toronto Faculty of Medicine	(1936) 80.8	(1936)	83
McGill University Faculty of Medicine			

* License has not been issued

† This applicant has completed the medical course and will receive the M.D. degree on completion of internship License has not been issued

Indiana June Examination

Dr J W Bowers, secretary, Indiana State Board of Medical Registration and Examination, reports the written examination held at Indianapolis, June 22-24 1937. The examination covered 15 subjects and included 100 questions. An average of 75 per cent was required to pass. One hundred and twenty-five candidates were examined, 123 of whom passed and two failed. The following schools were represented:

School	PASSED	Year Grad	Per Cent
College of Medical Evangelists		(1937)	82 8
Loyola University School of Medicine (1937 2)*		(1937)	83 8
Northwestern University Medical School (1937) 80 2 85 3		(1936)	86 3
Rush Medical College (1935) 85 1 (1936) 85 4 (1937)			84 6
School of Medicine of the Division of the Biological Sciences (1937)			82 3
University of Illinois College of Medicine (1937)			85 7
Indiana University School of Medicine 86 7 (1937) 80 5 80 8 81 81 3 81 4 81 7 81 9 82 2 82 3 82 4 82 5 82 6 82 7 82 7 82 9 82 9 83 83 1 83 1 83 2 83 3 83 4 83 5 83 6 83 6 83 7 83 7 83 9 83 9 84 84 84 84 1 84 2 84 2 84 3 84 3 84 4 84 4 84 4 84 4 84 5 84 6 84 7 84 7 84 8 84 9 84 9 84 9 85 85 85 85 1 85 2 85 2 85 2 85 3 85 4 85 4 85 4 85 4 85 5 85 6 85 7 85 8 85 8 86 86 1 86 1 86 2 86 2 86 2 86 4 86 4 86 6 86 6 86 8 86 8 86 9 87 87 2 87 6 87 7 87 7 87 8 87 8 87 8 88 1 88 1 88 6			83
Indiana University School of Medicine			7†
Harvard University Medical School (1937)			85 5
University of Minnesota Medical School (1925)			81 1
Creighton University School of Medicine (1936)			80 6
University of Toronto Faculty of Medicine (1936)			86 3
Magyar Kiralyi Pazmany Petrus Tudomanyegyetem Orvosi Fakultasa Budapest (1935)			84 8†
Universitat Bern Medizinische Fakultat (1935) 84 9 (1936)			80†

School	FAILED	Year Grad
Universidad de la Habana Facultad de Medicina y Farmacia (1924)†		
Magyar Kiralyi Pazmany Petrus Tudomanyegyetem Orvosi Fakultasa Budapest (1926)†		

* These applicants have completed the medical course and will receive the M.D. degree on completion of internship. License has not been issued.
† These applicants will be granted licenses on presentation of diploma.
‡ Verification of graduation in process.

Connecticut (Homeopathic) July Examination

Dr Joseph H Evans, secretary, Connecticut Homeopathic Medical Examining Board, reports the written examination held in Derby, July 16-17, 1937. The examination covered 7 subjects and included 70 questions. An average of 75 per cent was required to pass. Two candidates were examined, both of whom passed. One physician was successful in the oral examination for endorsement applicants. The following schools were represented:

School	PASSED	Year Grad	Per Cent
Hahnemann Medical College and Hospital of Philadelphia (1936) 82 4 *		(1937)	81 1*
School	PASSED	Year Endorsement Grad	of
New York Homeopathic Medical College and Flower Hospital (1914)*			Maine

* License has not been issued.

Alabama June Examination

Dr J N Baker, secretary, Alabama State Board of Medical Examiners, reports the written examination held at Montgomery, June 22-24, 1937. The examination covered 10 subjects and included 100 questions. An average of 75 per cent was required to pass. Twenty-seven candidates were examined, 26 of whom passed and one failed. The following schools were represented:

School	PASSED	Year Grad	Per Cent
University of Alabama School of Medicine (1904)			76
George Washington University School of Medicine (1933)			87 3
Emory University School of Medicine (1937) 82 4			86 6
Rush Medical College (1937) 82 5 83 9			89 3
University of Illinois College of Medicine (1936)			89 6
Tulane University of Louisiana School of Medicine 88 5 88 6 89 1			86 7
Harvard University Medical School (1933)			87 1
Washington University School of Medicine (1937) 83 6			85 7
Cornell University Medical College (1937)			89 2
New York University College of Medicine (1937)			86 2
University of Pennsylvania School of Medicine (1937) 90 7			90 9
University of Tennessee College of Medicine (1936)			81 3
Schlesische-Friedrich Wilhelms Universitat Medizinische Fakultat Breslau (1934)			80 2*

Magyar Királyi Pázmány Péter Tudományegyetem	(1936)	93.3*
Orvosi Fakultása Budapest		
School	FAILED	Year Grad
Regia Università di Napoli Facoltà di Medicina e Chirurgia	(1923)	61.4

* Verification of graduation in process

* Verification of graduation in process.

Colorado July Examination

Dr Harvey W Snyder, secretary, Colorado State Board of Medical Examiners, reports the written examination held at Denver, July 7-9, 1937. The examination covered 8 subjects and included 170 questions. An average of 75 per cent was required to pass. Twenty-four candidates were examined, 21 of whom passed and three failed. The following schools were represented:

School	PASSED	Year Grad	Per Cent
Northwestern University Medical School (1937)			86
University of Illinois College of Medicine (1937)			86
University of Michigan Medical School (1936)			84 5
Albert Ludwigs Universitat Medizinische Fakultat Freiburg (1914)			81*
Friedrich Wilhelms Universitat Medizinische Fakultat Berlin (1936)			85*
Julius Maximilians Universitat Medizinische Fakultat Wurzburg (1903)			82*
Osteopaths † 76 77 79 79 5 80 80 81 81 82 83 83 86 5 88 5 89			76,

School	FAILED	Year Grad	Per Cent
Universitat Leipzig Medizinische Fakultat Osteopaths † (1903)			73 74

* Verification of graduation in process.
† Examined in medicine and surgery.

Nevada Reciprocity and Endorsement Report

Dr John E Worden, secretary, Nevada State Board of Medical Examiners, reports two physicians licensed by reciprocity and one physician licensed by endorsement at the meeting held in Carson City, Aug 2, 1937. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad	Reciprocity with
Indiana University School of Medicine (1935)			Indiana
University of Nebraska College of Medicine (1934)			California
School	LICENSED BY ENDORSEMENT	Year Endorsement Grad	of
University of Georgia School of Medicine (1936) N B M E			Ex

Mississippi June Report

Dr R N Whitfield, assistant secretary, Mississippi State Board of Health reports the written examination held in Jackson, June 23-24, 1937. The examination covered 12 subjects. An average of 75 per cent was required to pass. Twenty-four candidates were examined, 22 of whom passed and two failed. Seventeen physicians were licensed by reciprocity. The following schools were represented:

School	PASSED	Year Grad	Per Cent
Northwestern University Medical School (1935)			89 4
Louisiana State University Medical Center 84 9 * 85 5 * 87 5 * 89			83 1*
Tulane University of Louisiana School of Medicine (1937) 83 5 83 5 83 9 86 6 86 9 90 2			85
University of Tennessee College of Medicine (1937)			78 7
83 3 85 85 2 87 5 88 3 88 5			
Vanderbilt University School of Medicine (1937)			87 1
Regia Universita degli Studi di Roma Facolta di Medicina e Chirurgia (1935)			84 9†

School	FAILED	Year Grad	Per Cent
Nongraduates ‡			47 8 50 9

School	LICENSED BY RECIPROCITY	Year Grad	Reciprocity with
Emory University School of Medicine (1928) (1933 4)			Georgia
Louisiana State University Medical Center (1936)			Louisiana
Tulane University of Louisiana School of Medicine (1935) Louisiana (1933)			
McHarg Medical College (1936)			Tennessee
University of Tennessee College of Medicine (1935) (1936) Tennessee (1934)			
Vanderbilt University School of Medicine (1932)			Tennessee
University of Texas School of Medicine (1931)			Texas
University of Virginia Department of Medicine (1931)			Virginia
Univ of Wisconsin Medical School (1928) Wisconsin (1932)			California

* This applicant has received the M.B. degree and will receive the M.D. degree on completion of internship. License has not been issued.
† Verification of graduation in process.
‡ Permitted to come before the board by Special Act of Legislature.

Book Notices

Annual Review of Biochemistry Edited by James Murray Luck. Vol. 11. Cloth. Price \$5. Pp. 708. Stanford University California Annual Review of Biochemistry Ltd. 1937.

The sixth volume of these collected reviews, which have become almost indispensable to those interested in keeping abreast of recent developments in biochemistry, maintains the high standard of previous years. The present issue is further improved as a reference book by inclusion for the first time of an excellent subject index, the editorial committee indicates that a cumulative index covering the earlier volumes will be published later. This will remedy a really serious deficiency. The subjects covered in the present reviews include permeability, biologic oxidations and reductions, enzymes, microchemistry, chemistry of carbohydrates and glucosides, lipins, steroids, proteins and amino acids, sulfur compounds, nucleic acids, purines and pyrimidines, metabolism of carbohydrates, fats and proteins and amino acids, detoxication mechanisms, hormones, vitamins, nutrition, biochemistry of muscle, metabolism of brain and nerve, biochemistry of fish, chemical embryology, plant pigments, alkaloids, photosynthesis, mineral nutrition and organic acids of plants, biochemistry of bacteria, and immunochemistry. Thirty-five authors, many of them new to the Annual Review, from institutions in both Europe and America have contributed to this book. It is, of course, not feasible to review in detail so extensive and diverse a series of articles. Among them several deserve special praise, especially the article by G. F. Marrian and G. C. Butler on the hormones. These authors are to be commended for their critical commentary on a subject in which slovenly thinking, careless, poorly controlled work and rank commercialism have left a deep imprint on the practice of medicine. A number of other sections, such as those on vitamins, nutrition, detoxication mechanisms, immunochemistry, steroids and alkaloids, should be of special interest to clinicians.

K ycheniyu o ganglionevromakh tsentralnoy nervnoy sistemy [By] A. M. Antonov. Seriya doktorskiykh dissertatsiy dopushchennykh k zashechitu v Saratovskom Gosudarstvennom Meditsinskoy Institutu v 1935 36 uchebnom godu [Study of Ganglioneuromas of Central Nervous System. Series of Doctors Theses Obtained at Saratov State Medical Institute in 1935-36.] Paper. Gratis. Pp. 205 with illustrations. Saratov Izdanie Saratovskogo Gosudarstvennogo Instituta. 1936.

Antonov presents a critical study of forty-six cases of so-called ganglioneuromas of the central nervous system collected from universal literature, together with a detailed histologic study of his own two cases. He concludes that evidence adduced in favor of the ganglionic nature of the large cells in cases of ganglioneuromas of the central nervous system cited, based on the morphology of the nucleus, the presence of the nucleolus and the size of the cells, is inadequate, since the same morphologic criteria hold true in the case of the large glial cells. The sole presence of "typical" ganglionic cells containing Nissl bodies and neurofibrils does not determine the nature of the neoplasm, since ganglionic cells as well as the neurofibrils are characterized by remarkable persistence and may remain preserved as pre-existing cells and fibers in the case of a growing glioma. In order to prove that the typical ganglionic cells are a part of the blastomatic growth of the neoplasm, one must present positive evidence of their multiplication, and that has not been done in the cases cited. New formation of nerve fibrils, either medullated or nonmedullated, has not been demonstrated in gangliomas of the central nervous system. Such nerve fibers as are found in them are either those which have persisted or those which have been newly formed from the surrounding healthy nervous tissue. The forms of mitosis of nuclei described by the various authors as taking place in the large cells of the ganglioneuromas are characteristic of cells of glial rather than of ganglionic origin. The author believes that the formation of polynuclear giant cells with "deformed" or "grotesque" nuclei proceeds by way of asymmetrical, multipolar and essentially abortive karyokinesis. He insists that for the determination of the nature of a neoplasm it is not only essential to establish the character of the giant cells, be they ganglionic or glial but it involves a study of the morphology of the tumor as a whole and particularly of its embryonal cell. The presence of spongioblasts in a tumor determines the

nature of the entire neoplasm as a spongioblastoma. The author suggests the following classification of spongioblastomas: (a) spongioblastoma simplex (uniforme) for the tumors consisting predominantly of spongioblasts and not characterized by polymorphism of cellular elements, (b) spongioblastoma multiforme for tumors characterized by polymorphism of cellular elements without, however, the predominance of polynuclear giant cells (fibrillar astrocytes), (c) spongioblastoma multiforme astrocytare for tumors characterized by polymorphism of cellular elements with a predominance of polynuclear giant cells. Antonov concludes that all the cited cases of ganglioneuromas of the central nervous system were in reality tumors of glial nature predominantly polymorphous spongioblastomas. The second and third cases reported by Schmincke, the case of Paul, of Watjen and of Smirnov, were cases of spongioblastoma multiforme astrocytare, while the cases of Robertson, Behlunger and Otfried Foerster were astrocytomas. The author further expresses his doubt as to the ganglionic nature of certain neoplasms of the sympathetic nervous system and of the adrenals described as ganglioncuromas. He believes that in all probability these tumors are likewise of glial origin.

The Development of Cardiac Enlargement in Disease of the Heart. A Radiological Study. By J. H. Palmer. Medical Research Council Special Report Series No. 222. Paper. Price 1s. Pp. 49 with 58 illustrations. London: His Majesty's Stationery Office. 1937.

This small monograph of work emanating from the Cardiac Department of the London Hospital and carried out under the supervision of Dr. John Parkinson is an important contribution on the utility of x-ray examination in heart disease. The monograph contains an analysis of the development and prognosis of cardiac enlargement in approximately 200 cases of the more common types of heart disease. It is based on the direct superposition of successive cardiac outlines traced from tele-roentgenograms taken with carefully standardized technique. Among other things, it was concluded that (a) a residue of cardiac enlargement persists following prolonged bouts of congestive failure, (b) the position of the diaphragm is important in determining the apparent size of the heart, (c) enlargement was usually an involvement of all heart chambers, although certain valvular lesions tended to favor the enlargement of particular chambers, (d) the distribution of the enlargement to all chambers of the heart is aided by the restraining action of the pericardium, (e) coronary narrowing with myocardial ischemia may often cause otherwise unexplained progressive enlargement of the heart, and (f) stabilized hypertension by itself does not cause progressive cardiac enlargement. This short monograph merits careful attention not alone for the factual data contained but because it points the way by which careful objective evidence may be accumulated and used in the evaluation of cardiac disease.

Clinical Allergy. By Louis Tuff. M.D. Chief of Clinic of Allergy and Applied Immunology, Temple University Hospital, Philadelphia. Introduction by John A. Kolmer. M.D. Dr. P.H.D. Sc. Professor of Medicine, Temple University, Philadelphia. Cloth. Price \$3. Pp. 111 with 82 illustrations. Philadelphia & London: W. B. Saunders Company. 1937.

The author states in his preface that the book was intended primarily for the general practitioner, medical student and beginner in the field of allergy. The contents and organization of this work render this claim too modest. The book is suitable for general practitioners and beginners, and it avoids the fault found in previous similar works of attempting to write for the public as well as for the physician. The terms peculiar to allergy are defined in a lucid manner characteristic of the entire book. Lengthy reviews and conflicting opinions are avoided wherever possible. An excellent summary closes each chapter. In addition to these advantages in a work intended for the general practitioner, it condenses and organizes the recent literature on allergy so well that most specialists in the field will welcome it.

The subject is divided into four sections. 1. The fundamental principles of allergy and anaphylaxis, including the principles of diagnosis and treatment, are considered in 122 pages. The review of the principles of anaphylaxis and of allergy is excellently written, a difficult subject done in a clear, simple manner. The colored illustrations of skin and conjunctival reactions are well chosen. 2. The etiologic types of allergic reactions, such

as serum sickness, drug allergy, food allergy, pollen allergy, bacterial allergy and physical allergy, are adequately treated in separate chapters in another 122 pages. 3 The next 188 pages are devoted to the characteristic clinical manifestations of allergy, with particular emphasis on perennial and seasonal allergic rhinitis and asthma. This section is especially well illustrated with reproductions of roentgenograms of the lungs with and without the use of iodized oil. 4 The allergic dermatoses, including the urticarial dermatoses, atopic dermatitis and contact dermatitis, are included in a separate section. This section is of special value not alone to the general practitioner and allergist but also to the dermatologist. It is an excellent summary of the literature to date, with special emphasis paid to Sulzberger's well known work in this field. The final part of the book lends itself less to good organization. A chapter is devoted to allergy in pediatrics. Another discusses the relation of allergy to the various specialties. Finally, the appendix contains much valuable and practical information with no attempt at organization. This includes the methods of preparation of routine and special materials, the method for doing quantitative pollen surveys, an excellent detailed method for an environmental study, a list of the various allergens and their sources, and an adequate group of elimination diets.

Einführung in die chemische Physiologie. Von Dr. E. Lehnartz, a. o. Professor an der Universität Göttingen. Paper. Price 18 marks. Pp. 420 with 66 illustrations. Berlin: Julius Springer, 1937.

This introductory work, if thoroughly mastered, would result in a rather intimate acquaintance with the subject in question. The author begins with a descriptive account of the chemical groundwork of the body and proceeds to a functional treatment of the dynamic chemistry of vital processes. The selection of material is judicious and the work is well balanced. The author apologizes in his preface for not being able to include references to the original literature. In the body of the text, however, he proceeds to mention names, without references, of investigators of particular fields. In this he betrays a common failing by mentioning thirty German and central European names to ten of all other nationalities in approximately twenty pages taken at random for a test count. This is an unfortunate and insidious tendency of many writers of all groups, but it should certainly be guarded against in science, which, of all human activities, should maintain racial and national impartiality. The excuse that students unable to read foreign languages could not benefit by the citations is invalid here because references are not given in any case, and there is only the question of fairness in assigning credit for scientific progress. Certain diagrammatic representations are uncritical and inaccurate, for example, that of blood sugar regulation on page 294. There is convincing evidence that muscle glycogen cannot directly supply dextrose to maintain a falling blood sugar. The formulas and diagram for the mechanism of urea formation (p. 325) are unwarrantedly positive at the present stage of our knowledge. As a whole the work is interesting and generally accurate. The price \$8 for a textbook of 420 pages is exorbitant in comparison with similar American works, one of the best of which sells for \$4

Blackwater Fever. A Historical Survey and Summary of Observations Made Over a Century. By J. W. W. Stephens, M.D., F.R.S. Cloth. Price 15s. Pp. 727 with 2 illustrations. Liverpool: University Press of Liverpool. London: Hodder & Stoughton Ltd. 1937.

The author has attempted the tremendous task of giving a complete review of blackwater fever from its first recognition as a distinct condition until the present. The mass of literature would make this difficult, but in addition the task is all the more complicated by the lack of any true understanding of the etiology of the disease and the consequent lack of rational and controlled observations relating to its causation and cure. The main part of the book is divided into twelve chapters, of which four are concerned with etiology and the remaining with synonymy, geographic distribution, history, symptoms, treatment, prognosis, prophylaxis, blood, urine and feces, and pathology. Under each chapter the author has collected collated brief excerpts and concise reviews of all available literature, arranged for the most part in chronological sequence. The author points out that many data are of unequal value, but he has refrained from expressing his opinion on their ultimate value and has left

the records to indicate their frequently contradictory nature. Of particular importance is the fact that at the end of each chapter there is a short review giving the author's conclusions regarding the literature. A series of twenty-six appendices gives various additional data on the subjects treated in the main text and other materials bearing on the blackwater problem. In view of the relation of quinine to blackwater fever the author has devoted a series of these appendices to his notes on the history of Peruvian bark, the history and use of quinine and various data on quinine in relation to blackwater. Although this is not a consecutive, readable account of this disease, it will unquestionably be considered one of the most accurate, complete and scholarly compilations of source materials relating to any of the diseases of man. The book will be a practical necessity for all workers interested in this important disease whether they are clinicians, research workers or medical historians.

Preoperative and Postoperative Treatment. By Robert L. Mason, A.B., M.D., F.A.C.S., Assistant in Surgery at the Massachusetts General Hospital. Cloth. Price \$6. Pp. 495 with 123 illustrations. Philadelphia & London: W. B. Saunders Company, 1937.

The past decade has seen the development of an extensive literature on preoperative and postoperative treatment, and doubtless the advances in the postoperative management of surgical patients the surgeon owes in large measure to the physiologist and to the maintenance of better hospital records. No other single volume has so completely and so accurately covered these subjects and left so little in dispute. Beginning with methods of appraisal of operative risks, surgical patients with heart disease, hypertension, nephritis, diabetes, choice of anesthesia, and general methods of preoperative preparation, the author devotes the bulk of the volume to postoperative therapy. Of particular significance are chapters on shock, blood transfusion, water balance, acidosis and alkalosis, paralytic ileus, disruption of the abdominal wound and postoperative peritonitis. One recognizes a sound understanding of and deference for physiologic principles, particularly in the chapters on water balance, acidosis, shock and similar problems involving physiologic chemistry. There is an amazing amount of detail and care in the presentation of all subjects, and certainly the material is well abreast of contemporary literature. The text is profusely and well illustrated with photographs, charts and drawings. This volume represents a major contribution to surgical literature.

Die Gastroskopie. Lehrbuch und Atlas. Von Prof. Dr. Kurt Gutzelt, Direktor der Medizinischen Universitäts-Klinik Breslau, und Doz. Dr. Heinrich Teltge, Direktor des Städt. Krankenhauses am Urban, Berlin. Half leather. Price 56 marks. Pp. 342 with 207 illustrations. Berlin & Vienna: Urban & Schwarzenberg, 1937.

This splendid work is based on 5,000 gastroscopies, carried out in two German hospitals. The collaboration of the two authors has led to some contradictions. In the chapter on the indications for gastroscopy the statement is made that gastritis, as a result of gastroscopic research, now can be diagnosed in some cases according to its clinical aspects alone, in the clinical sections, however, it is pointed out with some emphasis that even now the diagnosis of chronic gastritis without gastroscopy is impossible. The technical section, describing the instruments and the special technic, is not entirely satisfactory. The advice to use not only flexible gastroscopes but also rigid instruments is especially dangerous. The authors believe that gastroscopy should be carried out only by the well trained expert, but they overlook that its use spreads so rapidly that it is impossible to tell who may be considered sufficiently trained. If dangerous rigid instruments instead of safe flexible ones are recommended, gastroscopy will share the fate of esophagoscopy and will not become that routine method of examination it should be in the study of gastric diseases. The clinical section is a contribution made valuable especially by 155 colored pictures, which are not grouped together as one usually finds but glued separately into the text. This new arrangement permits an easy comparison between text and pictures. The excellent description of gastric diseases is amplified by numerous case histories. The chapter on gastritis occupies seventy-two pages. Such rare conditions as tuberculosis and leukemia of the stomach are carefully described. Unfortunately, the authors have disregarded the extensive gastroscopic literature and have omitted important

and well observed pictures such as syphilis and lymphosarcoma of the stomach. Of special value is the appendix on the "causes of gastritis," based entirely on gastroscopic examination. It contains observations on gastritis in diabetes, nephritis, allergy and the various infectious diseases. This book should be read not only by the gastroscopist but by every clinician who is interested in gastric diseases and who is able to understand the authors' rather difficult German.

Chetvertaya venericheskaya bolezn bolezn Nikola I Favra. Sbornik pod redaktsiei prof. I. D. Perkhelya i prof. M. G. Khoroshina. [Fourth Venereal Disease: Nicolas Favre's Disease.] Odessky Gosudarstvenny Dermal Venerologicheskii Institut. Boards. Price 4 rubles. Pp. 155 with illustrations. Odessa, 1937.

This Russian work presents several papers based on the study of 153 cases of venereal lymphogranuloma treated at the institute between 1928 and 1935. The observations recorded are much the same as those observed in our clinics. The authors point out the preponderance of the disease in the male (85 per cent) and the occurrence of abortive and asymptomatic forms, particularly in women. The reaction of Frei was found to be of great practical importance in the diagnosis of difficult cases. All their cases of esthiomene (genito-anorectal elephantiasis) were preceded at some time, usually long past, by lymphogranuloma. The reaction of Frei was positive in twenty-four of twenty-five cases. The disease was far more predominant in women. Best therapeutic results were obtained from roentgenotherapy followed by surgical intervention. The authors consider genito-anorectal elephantiasis as a stage of the fourth venereal disease.

Tuberkulez legkikh i yavloniya narusheniya bronkhialnoy prokhodimosti. Atelektaz i emfizema. Pod redaktsiei Prof. S. A. Reynberga. [Pulmonary Tuberculosis and Disturbance of Bronchial Permeability. Atelectasis and Emphysema.] Cloth. Pp. 113 with 185 illustrations. Moscow & Leningrad: Gosudarstvennoe izdatel'stvo biologicheskoy i meditsinskoy literatury. Leningradskoe otdelenie, 1937.

This volume, in Russian, contains a series of roentgenologic studies, animal experiments and clinical observations aiming to elucidate the incidence and the role of bronchial obstruction in the pathogenesis of various diseases of the lungs, but particularly in pulmonary tuberculosis. Bronchography in the living patient, postmortem bronchography, and bronchoscopy will, in the opinion of the authors, broaden our knowledge of the morphology and physiology of the bronchial tree and of the tuberculous process. The authors concede the priority of the concept of bronchial obstruction as a factor in the pathogenesis of pulmonary diseases to American workers (Jackson, Coryllos and Birnbaum). It appears from their observations that bronchial obstruction is a frequent if not constant phenomenon in atelectasis and emphysema. They were not, however, able to support Coryllos's theory of pneumonia, since in their studies the bronchi were never found to be occluded in that condition.

To Drink or Not to Drink. By Charles H. Durfee. Ph.D. Cloth. Price \$2. Pp. 212. New York & Toronto: Longmans Green & Co., 1937.

This interesting and lucid book on the "problem drinker" deals with but one aspect of the problem of addiction to alcohol. The author does not undertake to discuss those diverse pathologic mental problems associated with chronic alcoholism.

The book consists of eleven chapters, the last being a dissertation on the archaic attitude of the general public toward alcoholism. The popular conception of the chronic alcoholic addict has been one of condemnation. The moral issue, with its indignant attitude and vindictive outlook, stands in paradoxical relationship to the opinions of poets and philosophers who have sung through the ages of the joys of drinking. These paradoxical attitudes represent forms of individual rationalization and probably bear a relation to the popular concepts respecting individual responsibilities involving choice of behavior.

The problem drinker cannot be understood or satisfactorily treated, or his condition ameliorated or prevented through an emotional outlook that is influenced by a spirit of vindictiveness or maudlin sympathy. With the foregoing premise in mind, the theme of this volume is perhaps expressed in the author's own words: "Modern therapy of alcoholism takes its stand on practical grounds. Its effort to change conduct unlike the miracle methods of old are based on the hypothesis, confirmed by both research and common sense, that the behavior of an

individual is the interaction of himself and his circumstances. If we recognize alcoholism as a symptom of some difficulty of the whole man and deal with it realistically we rob it of its terrors and offer freedom and happiness to countless harassed problem drinkers."

The author expresses the hope that the book may be of value to the family physician, the clergyman, the welfare worker and the public administrator, and all who come in contact with the drink problem. It is obvious that many family physicians are consulted from time to time concerning the best methods of approaching the problem drinker who is detrimental to himself and those nearest and dearest to him. In the use of this little book, serious consideration might be given to the possibility of its being placed on the family physician's reading list for prescription to the problem drinker and those who come in contact with him, since the book affords many passages to stimulate reflection applicable to the drinker himself.

Laboratory Manual of General Physiology. By T. Cunliffe Barnes. D.Sc. Assistant Professor of Biology, Yale University. Paper. Price \$1. Pp. 116 with 9 illustrations. Philadelphia: P. Blakiston's Son & Co. Inc., 1937.

This manual was evidently designed to supplement the author's "Textbook of General Physiology" but can be used equally well independently. There are references accompanying most of the experiments to the original literature from which they are derived. While written for students in general biology, many of the experiments are easily adaptable to the laboratory in medical physiology. The directions are brief and concise. The subject matter covers such subjects as surface tension, ionic interaction, acid-base balance, colloids, enzymes, plasmolysis, amoeboid and ciliary movement, permeability, and then in a series of nicely selected, simple experiments, the physiologic functions of complex organisms are considered. These include respiration, circulation, muscle and the nervous system. However, one feels that such a work is not complete without more consideration of correlating mechanisms and of nutrition. Throughout the text there are parenthetical references to sources of special chemicals and other materials used in the experiments. Both medical students and instructors will find the book valuable for reference.

Studien über das Zusammenspiel von Hypophysen und Ovarialhormonen. Insbesondere im Lichte von Parabioseversuchen. Von Ejnar Møller Christensen. Paper. Pp. 157 with 59 illustrations. Copenhagen: Levin & Munksgaard, 1935.

This is a detailed presentation of original work by the author on the effects of hypophysectomy and castration on various functions in the rat. These were studied chiefly through the agency of parabiosis. The technique of hypophysectomy and parabiosis are considered at length, that of the latter is illustrated by reproductions of photographs. Many photomicrographs showing histologic changes in various organs are included. Three really beautiful color plates illustrating normal and pathologic cellular detail of the pituitary are appended. Endocrinologists will find this a valuable acquisition to their libraries.

Injuries and Diseases of the Hip. Surgery and Conservative Treatment. By Fred H. Albee. M.D., LL.D., F.A.C.S., Chairman, Rehabilitation Commission of the State of New Jersey. Assisted by Robert L. Preston, M.D., Associate in Orthopedic Surgery, Columbia University (New York Post Graduate Medical School). Cloth. Price \$5.50. Pp. 298 with 100 illustrations. New York: Paul B. Hoeber, Inc., 1937.

This volume is chiefly valuable as a reference work on surgical procedures specifically adapted to the hip joint. The text and illustrations are taken largely from previously published works of the author with revisions and additions, approved methods of other writers also are included. One chapter is devoted entirely to a detailed description of the armamentarium of the surgeon for hip work, the next chapter deals with surgical anatomy and landmarks, preoperative preparations, and approaches to the joint. The discussion of clinical entities including pathology is brief, usually following a definite outline. A bibliography which is selective and usable rather than complete is provided. The book is ostensibly written for the benefit of the undergraduate and graduate student but probably will be appreciated more by the specialist for its detail of surgical technique.

Les méthodes chirurgicales du traitement de l'angine de poitrine. Evolution et résultats. Par Marcel Bérard. Préface par le P^r René Leriche. Paper. Pp 389. Paris. Masson & Cie [n d]

This is an excellent review of the results of surgical treatment of angina pectoris. No one has reviewed the literature so thoroughly as has Bérard, a pupil of René Leriche, one of the pioneers in the surgery of the sympathetic nervous system. The book emanates from Leriche's clinic in Lyons and reports the experiences of that clinic with this type of surgery. In addition, the author has traveled widely in Europe and also in this country, making a critical comparison of the pioneer work at Lyons and the efforts along these lines of surgeons elsewhere. Particular attention is paid to the work done in this country by White, Cutler, Beck and others. The author, although not a man with a large personal operative experience, gives an impartial view of the various operations as practiced by surgeons throughout the world. Bérard's book stands as a valuable contribution in a very specialized field and is highly recommended for those who have a reading knowledge of French.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Narcotics Constitutionalality of Harrison Narcotic Act—Section 2 of the Harrison Narcotic Act, in part, makes it unlawful for any person to sell, barter, exchange or give away opium or coca leaves or any compound, manufacture, salt, derivative or preparation thereof except in pursuance of a written order of the person to whom such drugs are sold, bartered, exchanged or given away, on a form to be issued in blank for that purpose by the commissioner of internal revenue. An indictment, said the U S circuit court of appeals, ninth circuit, charging a physician with unlawfully selling, bartering, exchanging and giving away, neither in pursuance of any written order nor in the course of his professional practice only, of a stated amount of morphine sulfate and cocaine by means of a prescription, sufficiently charges a violation of section 2 of the act. There was no merit, said the court, in the physician's contention that the Harrison Narcotic Act is an unconstitutional attempt, under the guise of taxation, to regulate purely intrastate matters. While doubt with respect to the constitutionality of the act was expressed by the Supreme Court of the United States in *U S v Daugherty* 269 U S 360, subsequent amendments have made it a genuine taxing act, thus removing any doubts of its constitutionality. *Alston v U S*, 274 U S 289, *Nigro v U S*, 276 U S 332. The circuit court of appeals, therefore, affirmed the conviction of the appellant physician—*Mauk v United States*, 88 F (2d) 557.

Malpractice Evidence of Medical Witness Necessary to Prove Negligence—The plaintiff severely injured the left side of his face and was attended by the defendant. Alleging that the treatment given by the defendant was negligent, the injured man sued him. At the conclusion of the plaintiff's evidence the trial court directed a verdict for the defendant and judgment was rendered thereon. The plaintiff then appealed to the court of civil appeals of Texas.

No physician or any person with expert knowledge testified in this case. The plaintiff testified that after his injury he suffered severe headaches, had double vision in his left eye and was able to work only for short periods of time. All the witnesses testified that the plaintiff had an ugly scar on the left side of his face, that his left eye was sunken and that the left side of his face was lower than the right side. But there was no evidence in the record that the defendant committed any overt act of negligence, nor was there any testimony that the treatment of the injury was not such as practiced by the average physician and surgeon in that particular locality. Certainly, the court said a layman could not say that any particular method of treatment practiced by a physician in a given case was proper or improper. It was contended that the failure of the defendant to use x-rays in the diagnosis of the plaintiff's

injury was negligent, but there was no testimony that the defendant owned an x-ray machine or that one was available in that locality that might have been used by him. Unquestionably, the facts showed that the physical condition and appearance of the plaintiff underwent a material change for the worse, but there was no evidence to show that this change was other than the natural result of the severe injury. In a case of this character, the court said, only medical testimony is legally competent to establish negligence, malpractice or unskillfulness on the part of the defendant and that such negligence, malpractice or unskillfulness was the proximate cause of the plaintiff's condition. In view of this lack of evidence, the trial court committed no error in directing a verdict for the defendant and the judgment entered thereon was affirmed—*Davis v Grissom (Texas)*, 103 S W (2d) 466.

Malpractice Failure to Recognize Septic Condition of Crushed Hand—Herbert Zimmerman, 9 years old, crushed his right hand in a washing machine wringer, August 1, leaving an open wound. The defendant treated the injury by swabbing it with ether and by baking. Alleging malpractice on the part of the physician, the boy and his father instituted separate actions against him. Verdicts in each action were returned for the plaintiffs but the trial court allowed motions for a new trial in each case on the sole ground that there was not sufficient evidence to warrant the verdicts. The plaintiffs appealed to the Supreme Judicial Court of Massachusetts.

There was evidence, the court said, which, if accepted by the jury in its aspects most favorable to the plaintiffs, had a tendency to show the following. On August 8, the boy's mother, seeing the injured hand unbandaged for the first time, observed what she thought was pus near the index finger, but the physician assured her that it was not pus. Shortly afterward the mother informed him that the boy had a temperature of 100 F to which the defendant observed "Oh, that is nothing." He continued the same treatment. About August 16 a hemorrhage occurred, which, according to medical evidence, was caused by infection having destroyed a blood vessel. The defendant put on a tourniquet and after taking a roentgenogram he told the parents that "sloughing there has washed the entire tendons away now, and soon we will have to operate." He did not operate sooner because, he said, "that is the chance I took." A second hemorrhage occurred a few days later, after which another physician operated. At that time there were raw surfaces from which pus exuded and the hand was swollen. A digital artery was found "eroded" along its entire length and tendons were found sloughed and destroyed from sepsis. The operation consisted in the removal of the sloughing tissue as a preliminary to further curative treatment. Later, other operations were necessary for skin and tendon grafting. The boy never recovered full motion of the index finger. There was much evidence, the court said, to contradict or to qualify that which has just been stated. But there was also evidence that during the course of the treatment the defendant, in talking to the mother, spoke of the boy's condition as not being serious, that up to and after the first hemorrhage he tried to dissuade her from calling in another physician whom she preferred, that when the mother pressed the defendant for the truth about the infection having destroyed the tendons, he replied "Well, I will take care of it," "Well that is true. I should have operated on him. That is the chance I took." "It is done now, and that is all there is to it. I will take care of it and you needn't worry about him. You needn't worry about expense, I will make good for everything."

We are of the opinion, said the Supreme Judicial Court, that from the evidence presented at the trial, including the admissions of the defendant, the jury could find that the defendant failed to exercise the skill and care which it was his duty as a physician to exercise toward his patient, in that he failed to discover the septic condition of the boy's hand, or failed to recognize its seriousness, and failed to give or to procure proper treatment as promptly as he should have done. The defendant contended that the evidence disclosed no ascertainable consequences resulting from any failure on his part which might not have followed from so severe an injury even if he had been in no way remiss. We think, however, said the court, that from the progressive nature of the infective process, in

which time may well be an important element, and from the evidence that the defendant's treatment after active infection set in was not proper and that infection was arrested when the treatment was changed, it cannot be said as a matter of law that there was no proof that delay in proper treatment was injurious in some degree, even if it only retarded ultimate recovery. Besides, if the jury believed the defendant made all of the admissions as stated, they could infer therefrom more than a recognition of harmless mistake on his part. They could infer an acknowledgment of all the necessary elements of legal liability for damages in some amount.

The Supreme Judicial Court accordingly reversed in each case the order of the trial court allowing the motion for a new trial and ordered the verdicts of the jury to stand—*Zimmerman v Litch* (two cases) (Mass.) 7 N E (2d) 437

Animal Experimentation Validity of Ordinance Authorizing Distribution of Impounded Dogs to Medical Schools and Hospitals—The city council of Chicago in 1931 passed an ordinance providing for the appointment by the commissioner of police of a poundmaster to have charge of the care of all animal activities of the department of police and authorizing the poundmaster to destroy humanely, or otherwise dispose of, any animal impounded in pursuance of the ordinance. The ordinance further provided

Whenever any reputable institutions of learning hospitals or their allied institutes in the city of Chicago shall make application to the Commissioner of Health for permission to use humanely unclaimed impounded animals for the good of mankind and the increase of knowledge relating to the cause prevention control and care of disease the Commissioner of Health on being satisfied that the said animals are to be so used shall request the Commissioner of Police to surrender said animals as applied for by the said institutions of learning hospitals or their allied institutes and thereupon it shall be the duty of the Commissioner of Police to cause said animals to be surrendered by the Poundmaster to said institutions of learning hospitals or their allied institutes for said uses

The Illinois Anti-Vivisection Society, incorporated under the laws of Illinois as a nonprofit organization, and one George D. Patterson, a citizen of Chicago, a taxpayer and an officer of the society named, instituted proceedings to restrain the city from disposing of dogs in the custody of the poundmaster to the various institutions of learning, hospitals, and the allied institutes as proposed in the ordinance. The University of Chicago, Northwestern University, Chicago Medical School, University of Illinois, Michael Reese Hospital and Loyola University were permitted to become parties defendant in the proceedings. The circuit court of Cook County, Ill., dismissed the petition for an injunction and the petitioners appealed to the appellate court of Illinois, third division, first district.

The petitioners contended that unclaimed animals in the custody of the poundmaster were public property, having an intrinsic value both while alive and when dead, and that a disposal of them under the provisions of the ordinance was a gift of public property to private persons and institutions without warrant or authority of law, that the ordinance passed by the city council did not give all citizens the same right to obtain dogs. It was contended that dogs at the rate of 1,000 a month were being delivered pursuant to the provisions of the ordinance free of charge to institutions of learning, hospitals and their allied institutes, notwithstanding that there were others ready, able, willing and desirous of purchasing the dogs but were deprived of that right under the terms of the ordinance.

The ordinance was passed by the city council under authority of section 80 of the Cities and Villages Act—*Illinois Revised Statutes of 1935, c 24 par 65 (80)*. This act by its provisions permits the city council to pass an ordinance to provide for the appointment of a board of health, and to provide by such ordinance regulations necessary to promote health and the suppression of disease in Chicago. The purpose of the ordinance in question, said the court was to promote health and the suppression of disease to make provision whereby disease may be studied in its various forms for the benefit of the public. It seems to have been conceded that the Illinois Anti-Vivisection Society was not a proper party to be joined as plaintiff in this action and that society was dropped as a party plaintiff. With respect to Patterson's right to maintain the

action, the court considered it necessary to determine whether he, as a taxpayer, had suffered a special injury by the operation of the ordinance. Just what special injury he had sustained was not readily discoverable from the allegations of the bill. He complained as a taxpayer and citizen of the unlawful diversion of public property, and charged that his property was subject to greater taxes than he would otherwise have to pay if the dogs were disposed of for a consideration, that the dogs were public property and as a taxpayer he was entitled to the benefit that might accrue to the city by the proper disposition of the dogs for financial remuneration. But, said the court, this was a general allegation and did not indicate that Patterson suffered any special damage. In the absence of allegations showing special injury, the trial court acted properly in dismissing the complaint. The decree of the trial court was therefore affirmed—*Illinois Anti-Vivisection Soc et al v City of Chicago* (Ill.), 7 N E (2d) 379

Accident Insurance Death from Overdose of Apomorphine—The insured being "more or less intoxicated," his wife, a trained nurse, caused to be administered to him by another nurse a "double dose" of apomorphine to make him sleep and to sober him up. The amount administered was an overdose and the insured very shortly thereafter died as a result of it. It was the opinion of the supreme court, appellate division, fourth department, New York, that the death was accidental and that there was "evidence of such accidental death by a visible wound on the exterior of the body," the wound being caused by the hypodermic needle. The court did not think it necessary to determine whether a voluntary taking of an overdose of apomorphine would be considered accidental. In this case the hypodermic injection was administered by another person and the administration of the overdose was accidental so far as the insured was concerned—*Cummings v Phoenix Mut Life Ins Co of Hartford, Conn* (N Y), 294 N Y S 644

Accident Insurance Death Following Voluntary Act as Death from "Accidental Means"—Two policies issued by the defendant insurance company provided double indemnity if the insured should die from bodily injury sustained through external, violent and accidental means. The insured was pregnant and was taken to the delivery room in a hospital and prepared for delivery in the usual and customary manner. Preparatory to delivery a small amount of ether was administered. When she inhaled the ether she vomited, the vomitus entered the trachea and she was asphyxiated. The insurance company resisted payment of the double indemnity, claiming that since the insured voluntarily submitted herself to a parturition operation and voluntarily inhaled the ether, her death was not the result of accidental means within the provisions of the policies. The voluntary nature of the act, said the Supreme Court, appellate division, New York, does not exclude either accidental means or accidental results in fixing liability based on accidental cause in the case of injury or fatality not designed or expected. "Accidental means" are those which produce results that are not their natural and probable consequences. The court, therefore, reversed the judgment of the trial court for the insurance company and entered judgment for the plaintiff—*Burch v Prudential Ins Co of America* (N Y), 294 N Y S 458

Society Proceedings

COMING MEETINGS

American Society of Tropical Medicine New Orleans Nov 30 Dec 3
Dr. N. Paul Hudson Dept of Bacteriology Ohio State Univ.,
Columbus Ohio Secretary
Society for the Study of Asthma and Allied Conditions New York Dec
11 Dr. W. C. Spain 116 East 53d St New York Secretary
Society of American Bacteriologists Washington D C Dec 28 30
Dr. I. L. Baldwin College of Agriculture University of Wisconsin
Madison Wis Secretary
Southern Medical Association New Orleans Nov 30 Dec 3 Mr. C. I.
Loranz Empire Bldg Birmingham Ala Secretary
Southern Surgical Association Birmingham Ala Dec 7-9 Dr. Alton
Ochsner 1430 Tulane Ave New Orleans Secretary
Western Surgical Association Indianapolis Dec 3-4 Dr. Allen H.
Montgomery 122 South Michigan Blvd Chicago Secretary

Current Medical Literature

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American Journal of Medical Sciences, Philadelphia 194 449 596 (Oct.) 1937

- What Is Lipemic Nephrosis? G Fahr Minneapolis—p 449
*Absence of Peptic Ulcer in Pernicious Anemia. J R Kahn Cleveland—p 463
*Radiation and Cholecystectomy as Therapeutic Procedures for Typhoid Carriers. Katharine O Shea Elsom, S G Miller J S Forrester and G W Chamberlin Philadelphia—p 466
Acute Pancreatitis A Medical Problem A Trasoff and M Searf Philadelphia—p 470
Clinical Observations on Treatment of Pneumonia and Empyema by Some Quinine Derivatives Especially Hydroxyethylapocupreine W W G MacLachlan H H Permar J M Johnston and H B Burchell Pittsburgh—p 474
*Treatment of Acute Infectious Arthritis of Undetermined Origin with Artificial Fever R M Stecher and W M Solomon Cleveland—p 485
Experimental Studies on Effect of Temporary Occlusion of Coronary Arteries in Producing Persistent Electrocardiographic Changes. H L Blumgart Boston H E Hoff, New Haven, Conn., M Landowne and M J Schlesinger, Boston—p 493
Pulmonary Circulation in Artificial Pneumothorax and Anthracosis R Charr and R Riddle White Haven Pa—p 502
Angiospastic Claudication Report of Six Cases I L Pearl, San Francisco—p 505
Changes in Electrocardiogram as Criteria of Individual Constitution Derived from Its Physiologic Panel G Draper H G Bruenn and C W Dupertuis New York—p 514
Action of Diaphragm in Cough Experimental and Clinical Study on the Human P N Coryllos New York—p 523
Carcinoma of Bronchus in Association with Anthracosis Study of Four Cases R Charr White Haven Pa—p 535
Mastitis in the Male C L Wilmoth Denver—p 541
Diagnostic Value of Supravital Staining in Infectious Mononucleosis E A Gall Boston—p 546
Effect of Intravenous Injection of Hypertonic Dextrose Solution on Cerebrospinal Fluid Pressure in Cases of Brain Tumor F G Lindemulder San Diego Calif—p 554
Vasodepressor Activity of Blood of Normal and Burned Dogs Criticism of Method F W Kinard and F N Martin Jr Charleston S C—p 560

Absence of Peptic Ulcer in Pernicious Anemia—Kahn reviewed the charts of 840 patients with pernicious anemia admitted to nine hospitals during a period of fifteen years. This disease was chosen because of the known absence of free hydrochloric acid in the stomach. Of these, 616 had at least one analysis of their gastric contents and none showed the presence of free hydrochloric acid. Thus it is fair to assume that the remaining 224 patients, or at least a high percentage of them, had achlorhydria. In none of the 840 patients with pernicious anemia was a diagnosis of chronic peptic ulcer made during the time that they were in the hospitals, and in only two was there any history at any time of an ulcerative lesion of the stomach. The results of the study indicate that hydrochloric acid in the stomach may be of significance in the pathogenesis and persistence of peptic ulcer. If it is found, as a result of other surveys of this kind, that chronic peptic ulcer rarely or never develops in a patient with pernicious anemia, it may be safe to infer that at least normal acidity, or perhaps hyperacidity, is one of the conditions necessary for the development of chronic peptic ulcer. In another type of anemia, chlorosis, in which there is hyperchlorhydria, the incidence of peptic ulcer is said to be high. Many instances of chronic peptic ulcer are associated with chronic hypertrophic gastritis.

Therapeutic Procedures for Typhoid Carriers—Elsom and her colleagues made a study of twenty-two typhoid carriers, twelve of whom were later treated by the method of Gulbrandson (roentgen therapy) and two by cholecystectomy. In all but one, who was a urinary carrier, cultures of the duodenal contents before treatment showed typhoid organisms, and the function of the gallbladder was impaired as determined by x-ray examination. Radiation was entirely ineffective in eradicating

the infection. Cholecystectomy, on the other hand, was followed by relief from infection in each instance.

Treatment of Arthritis with Artificial Fever—Stecher and Solomon present the results that they obtained in twenty patients suffering from acute nonspecific infectious arthritis who, in addition to fever therapy, were given rest in bed and acetylsalicylic acid as indicated. Not only did 60 per cent of the twenty patients make complete, prompt recovery and 40 per cent have partial relief, but the duration of the disease was shortened in all, its severity decreased, the incidence of damage to the joints lessened and the damage that did occur minimized. These results compare favorably with those which have been reported in cases of gonorrheal arthritis treated with fever therapy. The twelve patients receiving complete relief had arthritic symptoms from one to ten weeks before fever therapy was instituted. These patients received from two to twenty-five hours of fever (105 F) for relief (average 7.3 hours). The eight patients having only partial relief had arthritic symptoms from two to sixteen weeks before fever therapy was instituted. This group received from five to thirty hours of fever (average seventeen hours). Five of the six patients showing x-ray evidence of damage to the joints were of the group of longer duration, indicating the importance of prompt therapy. Although the treatment of acute infectious arthritis with artificial fever must be regarded as empirical, its use is not without precedent.

American J Obstetrics and Gynecology, St Louis

34 365 548 (Sept.) 1937

- Carcinoma of Cervix During Pregnancy W C Danforth Evanston Ill—p 365
Effect of Ovarian Hormones on Human (Nonpuerperal) Uterus. L Krohn J E Lackner and S Soskin Chicago—p 379
Pyelo Ureteritis in Pregnancy Etiology Acute Phase and Treatment H F Traut New York—p 392
End Results of Urinary Tract Infections Associated with Pregnancy E G Crahtree in collaboration with G C Prather and E L Fricke Boston—p 405
*Study of End Results of Treatment of Amenorrhea and Sterility by Radiation of 128 Married Women Over a Period of Twelve Years I I Kaplan New York—p 420
Pathology of Cervix W Seidler Vienna Austria—p 430
Experimental and Clinical Therapy of Vulvovaginal Mycoses H C Hesselbine Chicago—p 439
Oral Administration of Paraldehyde for Relief of Pain During Labor E J DeCosta and R A Reis Chicago—p 448
Heart Disease in Pregnancy Analysis of 110 Cases A E Lamb Brooklyn—p 456
Surgical Complications of Pregnancy S A Cosgrove Jersey City N J—p 469
Mortality and Complications of 3129 Supracervical Hysteromyometomies H E Schmitz Chicago—p 480
Spleno-megaly in Pregnancy W B Serlin Chicago—p 486
*Episacroiliac Lipoma E Ries Chicago—p 490
Angiomatosis Retinae (Von Hippel's Disease Lindau's Disease) Complicated by Pregnancy M V Armstrong Brooklyn—p 494
Ectopic Gestation Following Pomeroy Sterilization M H Lutz Brooklyn—p 497
Eugenic Sterilization Laws in Europe Marie E Kopp Larchmont N Y—p 499
Operative Methods of Sterilization in the Female E Bishop Brooklyn—p 505
Sterilization by Irradiation I I Kaplan New York—p 507
Sterilization from the Point of View of the Obstetrician and Gynecologist B P Watson New York—p 512
Sterilization Legal Considerations for the Physician W J McWilliams New York—p 516
Sterilization and Eugenics F Kennedy New York—p 519
Sterilization from the Standpoint of the Internist J Wyckhoff New York—p 520

Irradiation of Amenorrhea and Sterility—After treating 128 amenorrheic and sterile women with x-rays and observing them and their children over an extended period, in some instances ten years, Kaplan is still of the opinion that in no other field of gynecology is irradiation more helpful and promising than in cases of functional disturbances of the ovary and in sterility. He has had but one untoward effect in which instance treatment was administered when there already existed an embryo in utero. The effect of x-rays on the embryo is profoundly different from the effect on unimpregnated ova. Follow-up records were obtained in 114 of the 128 patients. The fourteen patients that could not be traced are regarded as failures. The menses were regulated in seventy-six women and in fifty-two there was no improvement. The oldest patient treated was 45 years of age the youngest 19. In all instances some form of endocrine therapy had been used previously and

proved unavailing. Of the 128 patients treated, forty-three were treated for amenorrhea varying from months to years, forty-one for amenorrhea and sterility, eleven for sterility alone, and thirty-three for oligomenorrhea, the menstrual intervals being several months. In all instances treatment consisted of roentgen irradiation to the ovaries. In eighty cases an additional treatment was given to the pituitary and in five instances also to the thyroid. The dose given was from 75 to 150 roentgens to a field, one treatment a week for three weeks. Occasionally a fourth treatment was administered. Of the seventy-six patients in whom menstruation was reestablished, forty-four became pregnant. Of the forty-four patients who conceived, two are at present in the course of their pregnancy, seventeen have conceived more than once, five conceived but aborted, and two of these aborted twice. Thirty-six patients became pregnant and went to term, giving birth to forty-seven living children and one stillbirth with an abnormal fetus. Of the forty-four pregnant patients, amenorrhea existed from one month to fourteen years and sterility from one to eighteen years. Only four patients had previously borne children, three had previously aborted or miscarried. None of the patients treated were harmed in any way. In no case did menstruation cease or become scanty. A study of the surviving children shows them all normal, both physically and mentally. Reports from the parents have in no instance disclosed any abnormality or any physical deformities. The oldest child under study is now 10½ years of age.

Episacroiliac Lipoma—Ries observed a woman who was operated on for tubal pregnancy in 1917, for left salpingitis, hemorrhoids and anal fistula in 1929, and who came for examination in April 1936 because of disabling pain in the back extending to the right hip and thigh which woke her up in the morning and lasted all day. It was increased by bending over. She also complained of painful menses with discharge of clots, leukorrhea, headaches, constipation and varicose veins in both legs, which were painful at times. Examination of the sacral region showed a 3 by 2 cm elliptic tender tumor placed transversely over the lower end of the right sacroiliac joint at about the point of the lateral dimple. It was elastic and of the consistency of a fatty tumor. A smaller tumor, also tender, was found over a symmetrical point on the left side. The patient declared that these tumors were the seat of her pain in the back. On repeated examination the patient located her backache consistently at these two points. May 20, 1936, the tumors were removed through two small incisions with practically no loss of blood. The patient reported freedom from pain at once. An examination of 1,000 persons at random in dispensaries, hospitals and otherwise was undertaken in order to find whether similar cases existed and had been overlooked. There were 250 males and 750 females examined. Of the 1,000 persons examined, 309 had backache in the lumbosacral region, 159 of these were without any tumors, but 317 had similar tumors. Of the 317 with tumors, forty-six were males and 271 females, that is, 18.4 per cent of the males and 36.1 per cent of the females examined showed tumors. Patients with these painful tumors recognize the area as the seat of their pain immediately, and the pain is elicited promptly by handling, pressing or moving the tumor. In some patients pressure on the episacroiliac lipoma is not only painful but causes pain to radiate from the tumor. The two characteristic dimples in the sacral region are the most favored sites of these growths. Most of those found were within 5 cm of either dimple. None of the persons examined (except three) had any knowledge of their tumors and therefore none could give information about the length of time they had had them. But if the symptom of severe backache which was referred to the episacroiliac tumors can be taken as a guide, these patients had suffered from them for years. The treatment of the episacroiliac lipomas has been by injection or by excision. Injection of 2 per cent procaine hydrochloride with or without epinephrine into the tumor or around and under it has been a simple way of relieving the pain. The relief has been strikingly rapid especially in cases of long standing in which many kinds of other treatments have been administered. The result in a number of cases has lasted for weeks. In the case of rather large tumors or in which relief from injection has been only temporary the tumor or tumors

have been excised, usually under local anesthesia. It has always been a simple matter to peel out the tumor from the surrounding tissue. Some twenty patients have so far been treated surgically by excision or injection.

Anatomical Record, Philadelphia

69 127 260 (Sept.) 1937

- The Presplenic Fold H. D. O'Brien Montreal—p. 127
- Uterine Contractions and Transport of Sperm in the Rat I. Rossman Chicago—p. 133
- Lateral Hermaphroditism in *Mus Musculus* Case Elizabeth Fekete Bar Harbor Maine—p. 151
- Staining of Paraffin Sections of Nervous Tissues with Activated Protagol Role of Fixatives D. Bodian Chicago—p. 153
- Unfertilized Human Tubal Ova G. Pincus and Barbara Saunders Boston—p. 163
- Quantitative Effects of Theelin on Body Growth and Endocrine Glands in Young Albino Rats C. B. Freudenberg and F. W. Clausen Salt Lake City—p. 171
- Effects of Various Gonadotropic Substances and Thyroxine on Ovaries of Horned Lizards (*Phrynosoma Cornutum*) C. H. Mellish and R. K. Meyer Madison Wis.—p. 179
- Oogenesis During Sexual Maturity First Stage Mitosis in Germinal Epithelium as Shown by Colchicine Technique E. Allen and R. N. Creadick New Haven, Conn.—p. 191
- Response of Rat Endometrium to Cancer Grafts F. E. Mohs and M. F. Guyer Madison Wis.—p. 197
- Hypophysectomy and Its Effects on Male Reproductive Organs in Wild Mammal with Annual Rut (*Citellus*) L. J. Wells and E. T. Gomez Columbia Mo.—p. 213
- Structural and Functional Reconstitution of Ultracentrifuged Rat Adrenal Cells in Autoplastic Grafts E. J. Dornfeld Madison Wis.—p. 229
- Studies on Creeper Fowl XI Castration and Length of Bones of Appendicular Skeleton in Normal and Creeper Fowl W. Landauer, Storrs Conn.—p. 247

Archives of Dermatology and Syphilology, Chicago

36 685 936 (Oct.) 1937

- The Problem of Involvement of Liver in Syphilis Comment on Its More Important Phases with Case Reports S. Irgang New York—p. 685
- Clinical Excretion of Bismuth After Oral Administration of Solbisminol P. J. Hanzlik A. J. Lehman A. P. Richardson and W. Van Winkle Jr. San Francisco—p. 708
- *Rapid Clinical Method for Estimation of Bismuth in Urine P. J. Hanzlik A. J. Lehman A. P. Richardson and W. Van Winkle Jr. San Francisco—p. 725
- Conception of Lupus Erythematosus and Its Morphologic Variants with Particular Reference to Systemic Lupus Erythematosus II Neil New York—p. 729
- New Conceptions of Etiology and Pathogenesis of Aene Vulgaris A. Bregman, Edgewater N. J.—p. 758
- Experimental Vaginal and Cutaneous Moniliasis Clinical and Laboratory Study of Certain Monilias Associated with Vaginal Oral and Cutaneous Thrush P. B. Bland A. E. Rakoff and I. J. Pincus Philadelphia—p. 760
- Studies in the Genus *Microrhizium* III Taxonomic Studies N. F. Conant Durham N. C.—p. 781
- *Secondary Macular Atrophy Study of Twelve Cases Occurring in Connection with Various Disorders with Consideration of Pathologic Relationships R. H. Seull Chicago and R. Nomland, Iowa City—p. 809
- Ringworm of the Scalp IV (a) Comparative Reactions to Cutaneous Tests with *Trichophyton* in Children With and Without Ringworm of the Scalp (b) Evaluation of Therapy with Stock Vaccines in Types of Infection Resistant to Treatment G. M. Lewis and Mary E. Hopper New York—p. 821
- A Remarkable Lichen Planus Lesion of the Tongue D. W. Montgomery San Francisco—p. 833
- Experiments in Culture of Organism of Lichen Planus by Jacob and Helmbold's Method C. Postma Amsterdam Netherlands—p. 836
- Leaf of Aloe Vera in Treatment of Roentgen Ray Ulcers Report of Two Additional Cases A. B. Loveman Louisville Ky.—p. 838
- Tinea Capitis with Kerion in an Adult Caused by *Trichophyton Gypseum* Laeticolor C. L. Cummer, Cleveland—p. 844

Rapid Method for Estimation of Bismuth in Urine—For the rapid estimation of the bismuth content of urine Hanzlik and his associates outline the following procedure. Ten cc of urine is put in a long test tube (3 by 20 cm), one tablet (0.4 Gm) of potassium permanganate and 2 cc of concentrated sulfuric acid are added (heating will produce foaming), this is gently boiled over a microburner for about two minutes, one tablet (0.4 Gm) of oxalic acid is added (decolorization will take place and the solution should be allowed to cool) one tablet (from 0.01 to 0.04 Gm) of sodium sulfite and sodium sulfate and one tablet (0.05 Gm) of sodium iodide are added (the fluid will become yellowish green if bismuth is present) and then it is matched with the color scale, the test tube being held against the white margin above the standards. If for an occasional specimen complete oxidation does not take place, indicated by

the presence of some tint the procedure from the second step on should be repeated. The final oxidized solution must be clear as water for the proper matching of colors. The long oxidation color method and the method described were applied simultaneously to 344 specimens and the short method alone to about 1,000 specimens. The comparison showed that the short clinical method described is as accurate as need be for use in control of medication with bismuth for syphilis and probably for most clinical purposes. Although greater accuracy can be achieved with it, when desired by using more color standards instead of interpolations and complete collections of urine instead of an assumed average volume, the added inconvenience occasioned by these refinements is not warranted for ordinary purposes. It has proved useful in controlling oral medication with bismuth to make routine examination of weekly urinary specimens.

Secondary Macular Atrophy—Scull and Nomland observed twelve cases of secondary macular atrophy, seven of which occurred in association with syphilis, two with lupus erythematosus and two with acrodermatitis chronica atrophicans. In one case the associated disease was not known. Clinical activity of an associated disorder, such as syphilis, seemed to have no relation to microscopic signs of activity in the secondary atrophic lesions. About half of the biopsies of the atrophic lesions revealed no activity, and the changes that were present might be termed ghosts of former lesions. The atrophic macules occurred independent of the associated eruption, and in a case of secondary syphilis with macular atrophy there was no evidence of exanthem near the atrophic lesions. The following conclusions are drawn. Secondary macular atrophy is the result of subclinical destruction of the elastic tissue by an inflammatory infiltrate, and however diverse the accompanying disorders may be they have in common an inflammatory infiltration in the cutis, which gives rise to the usual clinical lesion.

Arkansas Medical Society Journal, Fort Smith

34 87 104 (Oct.) 1937

- Intestinal Obstruction J K Donaldson Little Rock—p 87
Importance of Urinalysis N B Ellis Wilson—p 89
Balanced Buffered Solutions A Therapeutic Acid in Pediatrics I J Spitzberg Little Rock—p 93
Unusual Complication Following a Caldwell-Luc Operation T E Fuller Texarkana—p 94

California and Western Medicine, San Francisco

47 145 216 (Sept.) 1937

- * Valley Fever of the San Joaquin Valley and Fungus Coccidioides E C Dickson San Francisco—p 151
Subcutaneous Glomus Tumor L R Chandler San Francisco—p 156
Radiation Therapy Its Status in the Practice of Medicine W E Costlow Los Angeles—p 158
Posterior Vaginal Hernia R B McCarty Riverside—p 161
Mental Hygiene Viewpoints on Some Common Pediatric Problems F N Anderson Los Angeles—p 164
Acute Iritis Its Treatment F H Rodin San Francisco—p 167
Relapsing Fever Comments on Its Incidence in Nevada F C Reynolds Chico—p 170
* Plasma Cell Myeloma and Hyperproteinemia I C Schumacher O O Williams and G S Coltrin San Francisco—p 174
The Heart The Present Status of Physical Examination G Van Scoyoc Los Angeles—p 177
Deaf and Hard of Hearing Children Their Physical and Mental Needs R Hoobler Oakland—p 183

"Valley Fever" and Fungus Coccidioides—Four of the five patients having valley fever followed by infection with Fungus coccidioides that Dickson cites were exposed to infection in the San Joaquin valley, the fifth in a laboratory when he was working with Fungus coccidioides. In all the onset of illness was characterized by pulmonary involvement with fever, cough and sputum. In case 1, in which the time of exposure to the infecting organism is accurately known, symptoms of pulmonary involvement began just nine days later. In four cases in which x-ray examination of the chest was done, the x-ray diagnosis on first examination was tuberculosis. It was only after the shadows in the roentgenograms cleared so rapidly that the roentgenologists questioned their diagnoses. All but one of the patients had erythema nodosum. In three patients the nodules appeared from thirteen to twenty-five days after the onset of illness and were accompanied by from 3 to 7 per cent eosinophils in the blood. One patient had two attacks with an interval of six weeks. In two cases the sedimentation rate was taken at the height of the disease and showed, respectively,

31 and 32 mm in one hour. None of the patients died. Two of them are apparently free from active coccidioides infection after seven years. One of the two who had the acute illness fifteen months ago is apparently well, the other developed secondary lesions in the skin of the neck, which healed under treatment and in the cervical lymph nodes. The fifth patient is recovering. The author believes that these cases prove conclusively that Fungus coccidioides is sometimes the cause of a symptom complex of acute illness which, as far as he can learn, has not been reported. It is identical with what has been known locally in the San Joaquin valley as "valley fever." Among fourteen consecutive patients with advanced coccidioid granuloma who were admitted to Kern County Hospital in 1935, three gave histories of having had valley fever. The acute disease appears to be the immediate result of initial infection with Fungus coccidioides, the organism which long has been associated with coccidioid granuloma. The author has suspected for some time that coccidioid granuloma is a secondary manifestation, which results when organisms which have lain dormant within the body for variable lengths of time eventually gain access to the blood stream and are disseminated to outlying local areas or throughout the body, thereby causing local coccidioid lesions in the skin, joints or elsewhere, or generalized coccidioid infection. Initial infection is evidently primarily through the respiratory tract in the majority of cases, but no clinical evidence of primary infection of the lungs has been collected.

Plasma Cell Myeloma and Hyperproteinemia—A patient with an unusually high blood protein, showing autohemagglutination, hemorrhages and renal insufficiency, was found by Schumacher and his associates to have at necropsy a diffuse myeloma of plasma cells, associated with minor changes of the bones. The protein present in the blood was unstable in character and coagulated readily on exposure to air. From histologic changes found in the brain and heart, spontaneous coagulation occurred in the blood stream some time before death. The actual tumor present was distributed throughout the bone marrow, with only a few clinically demonstrable lesions in the skull. Although increased plasma proteins and the accompanying manifestation of autohemagglutination may be found in conditions other than multiple myeloma, their presence should lead to careful x-ray studies of the bones to rule out this condition. The frequency of hyperproteinemia in multiple myeloma cannot be determined until adequate chemical studies have been made in all cases. It also appears to be equally true that its diagnostic specificity cannot be estimated until adequate studies of the blood protein have been undertaken in patients having a more or less generalized disease of the bones and bone marrow.

Canadian Public Health Journal, Toronto

28 417 470 (Sept.) 1937

- Anterior Poliomyelitis Present Incidence of Poliomyelitis in Ontario J T Phair Toronto—p 417
Poliomyelitis Virus and Experimental Infection J Craigie, Toronto—p 421
Some Epidemiologic Features of Poliomyelitis R D Defries, Toronto—p 424
Symptomatology B Hannah Toronto—p 427
Difficulties in Prognosis N Silverthorne Toronto—p 430
Nasal Spraying as Preventive of Poliomyelitis F T Tisdall, Toronto—p 431
Convalescent Serum Therapy N E McKinnon Toronto—p 434
Surgical Treatment of Poliomyelitis During Its Early Stages Surgical Staff Hospital for Sick Children Toronto—p 436
Bilateral Artificial Pneumothorax in Treatment of Pulmonary Tuberculosis H A Jones Tranquille B C—p 442
Cooperation in Local Health Services C E Hill Lansing Ont.—p 447
Cultural Method for Detecting Residual Gonococcal Infection R J Gibbons Vancouver, B C—p 450

Indiana State Medical Assn Journal, Indianapolis

30 519 558 (Oct.) 1937

- Practical Management of Prematures R A Craig Kolomo—p 519
True Congenital Dextrocardia with Situs Inversus Corroborated by Electrocardiographic and X-Ray Findings H N Middleton Indianapolis—p 522
Status of Human Parasite Infections in Indiana W H Headlee Lafayette—p 524
Congo Red in Treatment of Certain Infections Preliminary Report W L Green Columbus—p 527
Diarrhea Dehydration and Intoxication R N Wimmer Gary—p 529
Recent Trends in Medical Society Activities J B Maple Sullivan—p 532

Journal of Bone and Joint Surgery, Boston

19 873 1186 (Oct.) 1937 Partial Index

- Surgical Bone Grafting with "Os Purum Os Novum" and "Boiled Bone" S Orell Stockholm Sweden—p 873
- Malunion of Fractures and Deformities of Long Bones Improved Technic for Correction by Osteotomy C S Young Los Angeles—p 904
- Value of Early Weight Bearing in Treatment of Fractures of Neck of Femur Report of Twenty Four Cases S Kleinberg New York—p 964
- *Bone Regeneration Following Maggot Therapy in Compound Fractures Newer and Simplified Method of Maggot Application in Cases Complicated by Severe Comminution or Large Osseous Defects H T Simon A S Hamilton and C L Farrington New Orleans—p 985
- *Treatment of Acute Bursitis by Needle Irrigation R L Patterson Jr and W Darrach New York—p 993
- Recurrent or Habitual Dislocation of Patella Critical Analysis of Twenty Cases M T Horwitz Philadelphia—p 1027
- Importance of Early Diagnosis in Treatment of Slipping Femoral Epiphysis L Mayer New York—p 1046
- Studies in Bone Formation Effect of Local Presence of Calcium Salts on Osteogenesis A R Shands Jr Wilmington Del—p 1065
- Electrolytic Destruction of Bone Caused by Metal Fixation Devices W G Stuck San Antonio Texas—p 1077
- Operation for Meniscectomy of Knee D M Bosworth New York—p 1113
- Repair of Laceration of Flexor Pollicis Longus Tendon F G Murphy Chicago—p 1121
- Treatment of Fractures of Pelvis H Koster and L P Kasman Brooklyn—p 1130
- Avulsion Fracture of Ischial Tuberosity H H Cohen New York—p 1138

Bone Regeneration Following Maggot Therapy—Simon and his associates employed maggot therapy in fifty-five cases of severely comminuted compound fractures. Some of the compound fractures were complicated by the loss of bony tissue, but excellent regeneration followed maggot therapy. If the laceration of the skin is of sufficient size, no further opening is necessary. In the case of infected gunshot fractures and those in which the skin opening is small, an incision is made in the superficial tissues, roughly comparable to the area of bony comminution. No debridement is done and no attempt is made to remove any fragments of bone save those grossly detached. If gross hemorrhage is present, the wound is packed with petrolatum gauze for twenty-four hours. No antiseptics are used for cleansing the traumatized skin, muscle or bone. The surrounding skin is generally swabbed with ether and covered for from 2 to 3 inches about the wound with petrolatum gauze. A thin layer of sterile gauze is placed in the depths of the wound, dead spaces being eliminated when possible. Under aseptic precautions a massive dose (approximately 5000 in number representing about 1 cc of fly eggs) of twenty-four hour old maggots from 2 to 3 mm in length is removed from the sterile bottle with gauze and laid on the gauze covering the bottom of the wound. A dressing of sterile gauze from 4 to 6 inches in thickness is then applied. The maggots immediately enter the traumatized area in search of food. In response to the action of the larvae, a copious amount of thin, dark brown exudate pours from the wound and it is necessary to change the superficial layers of the gauze dressing covering the wound. The maggots mature in from twenty-four to forty-eight hours. Their removal from the wound is accomplished by removing the entire gauze dressing at the end of forty-eight hours, for, when the maggots are fully fed, they migrate from the wound into its covering. Comparatively few remain. They, in turn, may be removed by the later change of dressings. Generally speaking, none remain at the end of seventy-two hours. In contaminated but not infected lacerations, no pus or at the most, but little pus is noted and fine, clean pink granulations rapidly appear. Grossly infected wounds are cleansed of the dirty, heavy, gray granulations present, the discharge of the pus is diminished, and the odor is not quite so offensive. In this type of wound maggot implantations are necessary usually at intervals of from ten to fourteen days in contrast to intervals of from fourteen to twenty-one days in the simple contaminated wounds. Occasionally one single dose of maggots has been sufficient. The maggots loosen all nonviable bone fragments making their removal a simple matter during the dressings.

Treatment of Acute Bursitis by Needle Irrigation—Patterson and Darrach used an irrigation method in the treatment of sixty-three cases of subdeltoid bursitis. In quizzing the patients no relationship between bursitis and a previous infection was elicited. The equipment for irrigation consists

of two 18 gage steel needles $2\frac{1}{2}$ inches long, one 20 cc syringe, 60 cc of a 1 per cent solution of procaine hydrochloride, a hypodermic needle, one number 10 Bard-Parker blade and as much saline solution as thought necessary (usually about 60 cc). With the hypodermic needle and procaine hydrochloride a small wheal is made in the skin over the point of maximal tenderness. The skin is nicked through the epidermis. In like manner a second point is infiltrated about one-fourth inch posterior to the greater tuberosity of the humerus on a level with the superior facet. Following the injection of the procaine hydrochloride, one of the large needles is introduced through the cutaneous incision in the anterior portion of the anesthetized region. The point of the needle is directed posteriorly and upward toward the under surface of the acromioclavicular joint. The needle is then pushed deeper and, after it has reached a depth of from one-half to three-fourths inch the wall of the bursa can be felt as a definite resistance. A quick stab places the point of the needle within the bursa. Following the placing of this anterior needle, a second one is inserted into the region just posterior to the greater tuberosity about one fingerbreadth below the acromioclavicular joint. The needle is pushed gently down to the superior facet of the greater tuberosity and actual bone is felt with the tip of the needle. Then the needle is slowly withdrawn for about one-eighth inch and the tip of the needle is pointed in the direction of the assumed position of the tip of the anterior needle which is in the bursa. After this needle has been inserted for about one-half inch, the bursa is entered and 2 cc of procaine hydrochloride is used in each of the needles on the way down to the bursa and on going through the bursal sac. As soon as the two needles are in place, the syringe is filled with physiologic solution of sodium chloride and this is pushed through one needle to flow out the other. Usually, as soon as one syringe of saline solution has been pushed through, the patient states that the acute pain has disappeared. The bursa is washed clean with the saline solution. The needles are withdrawn and a small sterile dressing is applied to the region of the shoulder. Following this, the patient can usually move the arm freely in all directions without pain. As little saline solution as possible should be allowed to exude into the surrounding tissues. If this is prevented, the patient's arm will not be sore the following day. After the irrigation the arm is placed in a sling and the patient is allowed to go home and told to use the arm and move it only when he feels like it. No haste is made, with the result that on about the fourth to the sixth day the patient has full use of the arm without pain. Irrigation was most successful in acute cases without history of previous attacks, in cases in which the calcium, as seen in the roentgenogram, was not dense, round or bone-like and in cases in which the acute pain was localized and did not radiate.

Journal of Experimental Medicine, New York

GG 397 526 (Oct.) 1937

- Studies on Pulmonary Edema I Consequences of Bilateral Cervical Vagotomy in Rabbit S Farber Boston—p 397
- Id II Pathogenesis of Neuropathic Pulmonary Edema S Farber Boston—p 405
- Properties of Type Specific Proteins of Antipneumococcus Serums I Mouse Protective Value of Type I Serums with Reference to Trepanin Content K Goodner and F L Horsfall Jr New York—p 413
- Id II Immunologic Fractionation of Type I Antipneumococcus Horse and Rabbit Serums K Goodner and F L Horsfall Jr New York—p 425
- Id III Immunochemical Fractionation of Type I Antipneumococcus Horse and Rabbit Serums K Goodner and F L Horsfall Jr New York—p 437
- Absorption of Protein Solutions from Pulmonary Alveoli C K Drinker Madeline Field Warren and Margaret MacLennan Boston—p 449
- *Further Observations on Vitamin C Therapy in Experimental Poliomyelitis C W Jungblut New York—p 459
- Vitamin C Content of Monkey Tissues in Experimental Poliomyelitis C W Jungblut and R E R Feiner New York—p 479
- Influence of Prolonged Intensive Plasmytherapy on Ability of Organism to Regenerate Serum Protein D Melnick and G R Cowgill New Haven Conn—p 493
- Influence of Pregnancy and Lactation on Regeneration of Serum Protein D Melnick and G R Cowgill New Haven Conn—p 507

Vitamin C Therapy in Poliomyelitis—Jungblut discusses his results with the administration of vitamin C in poliomyelitis in monkeys. A group of 181 monkeys was infected intracerebrally with amounts of virus ranging from 0.01 to 0.05 cc

of a 10 per cent suspension of virus. At different intervals following infection treatment was begun with daily subcutaneous injections of from 5 to 100 mg of natural vitamin C for a period of two weeks. Of eighty-nine monkeys treated on the first or second day of infection twenty-six survived, of fifty-three monkeys treated on the third day of the infection twenty-three survived, and of thirty-nine monkeys treated on the fifth day of the infection nine survived without showing any evidence of paralysis. A group of 101 monkeys was infected intracerebrally with amounts of virus ranging from 0.05 to 1 cc of a 10 per cent suspension of virus. At different intervals following infection, treatment of these animals was begun with daily injections of from 5 to 100 mg of synthetic vitamin C for a period of two weeks. Of twenty-five monkeys treated on the first day of infection two survived without showing any evidence of paralysis, of twenty-six monkeys treated on the third day of the infection five survived and of fifty monkeys treated on the fourth and fifth day of the infection four survived. A control group of ninety-eight monkeys was infected intracerebrally with the same amounts of virus and remained untreated. In this group only five animals survived without showing any evidences of paralysis.

Journal Industrial Hygiene and Toxicology, Baltimore 19 283 348 (Sept.) 1937

- The Problem of Possible Systemic Effects from Certain Chlorinated Hydrocarbons C K Drinker Madeleine Field Warren and G A Bennett Boston—p 283
- Inquiry into the Health Hazard of Group of Workers Exposed to Alumina Dust C L Sutherland A Meiklejohn and F N R Price Sheffield England—p 312
- Influence of Gasoline Vapors on Saturation of Blood by Carbon Monoxide H W Brondum and G B Ray Brooklyn—p 320
- Chronic Toxicity of Tetrachlorethylene C P Carpenter Philadelphia—p 323
- Distribution of Methanol in Dogs After Inhalation and Administration by Stomach Tube and Subcutaneously W P Yant and H H Schrenk Pittsburgh—p 337

Journal of Infectious Diseases, Chicago

61 129 256 (Sept Oct.) 1937

- Observations on McLeod's Method for Culturing the Gonococcus L Thompson Rochester Minn—p 129
- Study of Milk Coagulation by Monilia Species G Worley and W D Stovall, Madison Wis—p 134
- Tests of Viruses of Choriomeningitis and Encephalitis (St. Louis) with Serum from Nonparalytic Poliomyelitis (New York City 1935) M Brodie New York—p 139
- Spirochetosis in White Mice Produced by Inoculation of Material from Chronic Pulmonary Abscess Ulcerative Stomatitis and Pyorrhea Alveolaris C Weiss San Francisco—p 143
- Ground Water Pollution and Bored Hole Latrine Elfreda L Caldwell and L W Parr Andalusia Ala—p 148
- Trichomoniasis of Turkeys M C Hawn Fargo N D—p 184
- Simulation of Spirochetal Morphology by Fusiform Bacteria M K Hine Rochester N Y—p 198
- Inclusion Bodies in Measles Jean Broadhurst Margaret Estelle MacLean and V Saurino New York—p 201
- Study of Paratyphoid Infection in Chicks O W Schalm Berkeley Calif—p 208
- Fibrinolytic Activity of Hemolytic Streptococci from Normal and Diseased Throats Elizabeth Jolly R H Weaver and M Scherago Lexington Ky—p 217
- Mucoid Encapsulated Hemolytic Streptococcus in Fatal Sepsis of an Orangutan I Pilot Chicago—p 220
- Lysis of Vibrio Comma by Bacteriophage and by Immune Serum W J MacNeal Frances C Frisbee and Elma Krumwiede New York—p 222
- Pneumococcus Toxin and Antitoxin G F Dick and A K Boor Chicago—p 228
- Persistence of Immunity in Guinea Pigs Immunized with Calcium Precipitated and Alum Precipitated Diphtheria Toxoids Gretchen R Sickles Albany N Y—p 234
- Preparation of Diphtheria Toxoid Action of Formaldehyde Precipitation by Calcium A Wadsworth J J Quigley and Gretchen R Sickles Albany N Y—p 237
- Serology of Spores of Bacillus Niger with Especial Reference to the H Antigen Elizabeth Jane Krauskopf and Elizabeth McCoy Madison Wis—p 251

Inclusion Bodies in Measles—Broadhurst and her co-workers demonstrated measles nigrosin staining inclusion bodies in the nasal membranes and in the Koplik spots in the buccal cavity. These inclusion bodies may be seen on the first day of the disease, but they seem to be uniformly present from the second day of the disease to at least the twelfth day. The inclusion bodies characteristic of measles are not present in persons who do not have measles or other virus infections. The presence of inclusion bodies is accompanied by definite erosion and changes of disintegration in the host cells. Similar

changes are seen in the lymphocytes present in the Koplik spots, as well as in the white corpuscles of measles patients.

Fibrinolytic Activity of Hemolytic Streptococci from Throats—Of 203 throat cultures from 133 apparently normal persons, and of twenty-eight cultures from twenty-eight patients who were under the care of a physician because of low grade infections of the throat, Jolly and her associates found hemolytic streptococci in 118 and twenty-seven, respectively. The fibrinolytic activity of the latter strains was slightly greater than that of the former but much less than that of check strains from severe streptococci infections. Studies of the application of the fibrinolytic test to the diagnosis of scarlet fever, to the examination of contacts and to the examination of patients for quarantine release in the limited number of cases available have yielded sufficiently significant results to warrant investigation on a larger scale.

Journal of Nervous and Mental Disease, New York

86 373 512 (Oct.) 1937

- *Malignant Tumors of Nasopharynx with Especial Reference to the Neurologic Complications Clinical Study of Thirty Five Cases W Needles New York—p 373
- Comparative Intelligence Ratings in Four Types of Dementia Praecox C E Trapp and Edith B James Boston—p 399
- Hypnosis Rational Form of Psychotherapy in Treatment of Psychoneuroses J L McCarney Catskill N Y—p 405
- Spontaneous Intracranial Subarachnoid Hemorrhage Report of Case H B Slavin Rochester N Y—p 425
- Nature of Tolerance to Ethyl Alcohol H Newman and J Card San Francisco—p 428

Malignant Tumors of Nasopharynx—Needles presents a study of thirty-five cases of malignant tumors of the nasopharynx, sixteen of which manifested neurologic complications. Patients with disturbances of the auditory mechanism—whether tinnitus, deafness, pain or stuffiness in the region of the ear—should be subjected in a routine manner to a nasopharyngeal examination. Likewise, in the presence of enlargement of the cervical lymph nodes the possibility of a nasopharyngeal growth should be entertained as regularly as is tuberculous adenitis, the leukemias or Hodgkin's disease. For the neurologist, the presence of a basilar syndrome, especially with involvement of the cranial nerves coursing through the middle fossa, should immediately lead to the request for a nasopharyngeal examination. A basilar meningioma, a metastatic neoplasm, an inflammatory process or an aneurysm at the base of the brain can produce an identical neurologic picture, the differential diagnosis may therefore hinge on this simple diagnostic procedure. When, finally, in addition to the auditory symptoms there is enlargement of the cervical glands and involvement of the cranial nerves at the base of the brain, an irrevocable syndrome of nasopharyngeal malignant tumor is present. The results obtained from radiotherapy in cases of nasopharyngeal tumor are encouraging but as yet far from satisfactory. Earlier diagnosis and treatment may be the instrumental factor in correcting this defect. In cases which clinically present the picture of malignant tumor of the nasopharynx it is well to disregard a negative biopsy report and to proceed with appropriate radiotherapeutic measures.

Journal of Pediatrics, St. Louis

11 321 454 (Sept.) 1937

- Postoperative Atelectasis Report of Case Promptly Relieved by Simple Measures L Sauer Evanson Ill—p 321
- *Clinical Evaluation of Hormone Treatment of Cryptorchidism Analysis of Thirty Nine Cases J H Hess and R H Kunstadter Chicago—p 324
- *Clinical Observations on Grip as Seen in Pediatric Practice Report on 1146 Cases C A Aldrich Winnetka Ill—p 331
- The Invalid Reaction in Children L Kanner Baltimore—p 341
- Diagnosis of Nonopaque Foreign Body in Tracheobronchial Tree with Description of Physical and X-Ray Findings M F Arbuckle St. Louis—p 356
- *Comparative Value of Spinach and Tomatoes in the Child's Diet T F Tisdall T G H Drake P Summerfeldt and S H Jackson Toronto—p 374
- Iron Cobalt Treatment of Physiologic and Nutritional Anemia in Infants K Kalo Chicago—p 385
- Metabolism and Excretion of Bile Pigment in Icterus Neonatorum S G Ross T R Waugh and H T Walley Montreal—p 397
- Whither L R DeBuys New Orleans—p 409

Hormone Treatment of Cryptorchidism—Of the thirty-nine cases of cryptorchidism that Hess and Kunstadter treated with hypodermic injections of gonadotropic substance from the urine of pregnant women or from the placenta, complete descent

occurred in twenty-eight, partial descent in four and no descent in seven. The majority of the successful results followed a total dose ranging from 2,500 to 3,500 rat units. Those patients who were given more extensive courses of treatment had rest periods of from four to six weeks. The cryptorchid should receive a trial course of endocrine therapy before surgical intervention is resorted to. The resulting enlargement of the testes and their adjacent structures frequently lessens the difficulty of surgical procedures.

Grip as Seen in Pediatric Practice—Aldrich studied the data of 1,146 instances of grip, occurring in 845 different children during a period of six years. There were 222 second attacks, fifty-eight third attacks, fifteen fourth attacks, five fifth attacks and one sixth attack. He divides the symptoms and observations that led to the diagnosis of grip into three groups: those seen at the onset, those seen up to three days after onset and those seen subsequently. In the presence of an epidemic, the diagnosis is usually easy. However, one must be on guard continuously against jumping at conclusions and must rule out other respiratory infections by careful physical examination. The incubation period is about one week. During periods in which there is no epidemic, it may be necessary to make a diagnosis largely by exclusion. At such times family exposure often helps the clinician. The diagnosis is often corroborated when the patient transmits the disease to other members of the family. Laryngitis or croup occurred in smaller epidemics identical in time with those of grip, making it seem probable that croup is a manifestation of grip in infancy. The epidemics of grip showed no chronological relation to the prevalence of general respiratory disease as shown by comparison with the incidence of pharyngitis. Of the complications, otitis media and capillary bronchitis were by far the most common. Of the children who developed capillary bronchitis, 70 per cent were known to be asthmatic and another 17 per cent were probably allergic. The prognosis was good. The only death was from meningitis, which resulted when measles complicated grip with mastoiditis.

Nutritional Value of Spinach and Tomatoes—Tisdall and his collaborators compared the nutritional value of spinach as prepared for consumption with that available in canned tomatoes. Cooked spinach and canned tomatoes are approximately of equal value as a source of iron for the prevention and cure of nutritional anemia in spite of the fact that the total iron content of cooked spinach is more than three times greater than that of canned tomatoes. Spinach, although it contains 0.19 per cent of calcium, an amount twenty times greater than that found in tomatoes, actually tends to produce a negative calcium balance. On the other hand, the retention of the calcium in cooked tomatoes is excellent. The vitamin A content of cooked spinach is approximately four times as great as that of canned tomatoes. The vitamin B₁ content of cooked spinach is approximately one-half that of cooked tomatoes. The vitamin C content of cooked spinach is less than one-fourth that of canned tomatoes. The vitamin D content of cooked spinach and canned tomatoes is negligible. Sufficient prominence has not been given to the nutritional value of canned tomatoes.

Medicine, Baltimore

16 215-350 (Sept.) 1937

- Influence of Pituitary and Adrenal Glands on Pancreatic Diabetes C. N. H. Long New Haven Conn.—p. 215
The Metabolism of Iron P. F. Hahn Rochester N. Y.—p. 249
Anemia of Iron Deficiency C. W. Heath and A. J. Patek Jr. Boston—p. 267

Missouri State Medical Assn. Journal, St. Louis

34 365-402 (Oct.) 1937

- Conservative Operations for Benign Malignant Disease of Uterus Attended by Hemorrhage A. E. Hertzler Halstead Kan.—p. 365
Treatment of Diabetes D. R. Black Kan. City—p. 367
Acute Diverticulitis of Sigmoid W. C. G. Krehner St. Louis—p. 371
Addiction to Barbituric Acid Derivatives G. W. Robinson Jr. Kan. City—p. 374
Prolonged Stimulation of Autonomic Nerves Immediate and Remote Effects on Bladder Rectum and Colon J. M. McCaughan St. Louis—p. 379
The Doctor Heart A. M. Ginsberg Kan. City—p. 383

Addiction to Barbituric Acid Derivatives—Robinson discusses some of the ill effects of the derivatives of barbituric acid. The little experimental work that has been done on heavy doses shows definite changes in the brain. The barbiturates

fall into the group of addiction-producing drugs. This statement is corroborated by the report of four cases in which the barbiturates were habit forming in certain psychologic types. This addictive action is similar to that of alcohol. There is, of course, a strong psychogenic factor in this class of cases, but the psychogenic factors are important in all forms of addiction. It requires a certain personality pattern in order that addiction may develop. Excessive doses destroy cerebral tissue and produce extreme toxicity. Barbitals addicts will take excessive doses and the deterioration frequently seen in these cases is due to destruction of cerebral tissue, which is accumulative over a period of time to a great enough extent to interfere with the patient's efficiency. The development of tolerance, while not as marked with these drugs as with some other forms of addiction-producing drugs, nevertheless leads the barbitals addict on to taking larger and larger doses so that the patient is soon taking toxic doses, which not only produce the clinical evidence of toxicity but also produce pathologic changes in the brain. These acute changes probably are the cause of the neurologic symptoms seen in barbitals poisoning both fatal and nonfatal. Laymen will use barbitals as the addict to alcohol uses alcohol.

Nebraska State Medical Journal, Lincoln

22 365-404 (Oct.) 1937

- The Prone and Right Lateral Position for Gravity Drainage in Perforated Appendicitis T. F. Riggs Pierre S. D.—p. 365
Ruptured Abdominal Aorta J. M. Neely Lincoln—p. 370
The Question of Cardiac Risk as Factor in Postoperative Cardiovascular Complications I. C. Munger Jr. Lincoln—p. 378
Insulin Hypoglycemic Shock Therapy in Psychoses Results Obtained in Twenty-Five Cases A. E. Bennett and P. T. Casli Omaha—p. 382
Treatment of H₂S Fever Vasomotor Rhinitis and Allergic Cases with Zinc Ionization Second Report P. L. Romonck Omaha—p. 387
Urethral Abscess Complicating the Puerperium H. E. Anderson Omaha—p. 390
Primary Carcinoma of Jejunum Case Report G. H. Misko Lincoln—p. 392

New Jersey Medical Society Journal, Trenton

34 591-648 (Oct.) 1937

- Practical Advantages of Subdivision of Tumor Types J. Ewing New York—p. 597
Primary Carcinoma of the Lung L. F. Craver New York—p. 598
Osteogenic Sarcoma of Humerus Case Presentation N. L. Higinbotham New York—p. 599
Wilms Tumors of the Kidney A. L. Dean New York—p. 600
Adenocarcinoma of the Hard and Soft Palate W. L. Watson New York—p. 601
Infiltrating Adenocarcinoma of the Prostate Grade 3 Controlled from Sept. 11, 1928, to Date B. S. Barringer New York—p. 602
Idiopathic Multiple Hemorrhagic Sarcoma of Kaposi G. T. Pack New York—p. 603
A Nasopharyngeal Tumor J. J. Duffy New York—p. 605
Hypoglycemic Shock Therapy in Schizophrenia Preliminary Report T. R. Robie W. I. Reinhardt and A. R. Abel East Orange—p. 606
Certain Aspects of Peptic Ulcer J. L. Kantor New York—p. 611
Studies of Gastrointestinal Temperature J. S. Hepburn and H. M. Eberhard Philadelphia—p. 617
Use of Chemically Pure Synthetic Allantoin in Treatment of Osteomyelitis A. R. Commune Rahway—p. 619
Correct Technique in Electrocoagulation of Cervix and Its Attending Dangers Maternal Welfare Article Number Twenty I. F. Frost Morristown—p. 621

New Orleans Medical and Surgical Journal

90 175-244 (Oct.) 1937

- Evolution of Gynecology W. D. Phillips New Orleans—p. 175
Pelvic Conditions Simulating Appendicitis J. P. Pratt Detroit—p. 183
Value and Use of Diuretics in Edema with Especial Reference to Mercurial Diuretics R. Lyons New Orleans—p. 188
Diverticulosis and Diverticulitis of Intestinal Tract T. P. Lloyd Shreveport La.—p. 196
Urinary Infections in Children M. F. Campbell New York—p. 200
Relation of Liver to Nutrition with Especial Reference to Nervous System A. Hassler New York—p. 205
Menstrual Purpura F. C. Smith New Orleans—p. 214
Toxic Effects of Carbon Dioxide R. M. Waters Madison Wis.—p. 219

Menstrual Purpura—Smith encountered five patients each presenting symmetrical purpuric rashes of the lower extremities coincident with or apparently related to the menstrual periods. There are many reports on menstrual exanthems but he wishes to differentiate these manifestations from the bilateral almost symmetrical purpuric rash of the lower extremities which so clearly defines his series. The following points are to be considered in establishing the diagnosis of menstrual purpura: 1. A distinct intracutaneous hemorrhagic rash is present recurrent during or related to the menstrual periods usually more

or less bilateral and usually limited to the lower extremities. It does not disappear on pressure. 2 The rash is usually associated with a scanty menstrual flow. 3 There is a definite decrease in the number of platelets, averaging approximately 200,000 per cubic millimeter of blood, without any noticeable change in the bleeding and coagulation time. 4 Other blood analyses do not present noticeable variations from the normal. 5 There has been a predominant nervous element in every case. 6 There is no tendency to spontaneous bleeding from mucous membranes. The ages of these patients varied between 18 and 30 years. Treatment consists in (1) relieving the itching of the rash, (2) establishing a normal menstrual flow by supplemental therapy (based on hypofunction of the ovaries, by use of theelin and corpus luteum extract) and stimulation therapy (use of anterior pituitary gonad stimulating hormone), (3) overcoming the nervous phenomena by assuring the patient and all concerned of a good prognosis, (4) eradicating all foci of infection as soon as the condition of the patient permits and (5) assuring the general well being of the patient by proper sleep, freedom from worry and mental strain, proper digestion of wholesome food and overcoming constipation.

New York State Journal of Medicine, New York

37 1619 1706 (Oct 1) 1937

- Histogenesis of Laennec's Cirrhosis J F Hart and J R Lisa New York—p 1619
Psychic States Associated with Hyperglycemia E N Boudreau Syracuse—p 1627
Congenital Syphilis Three Year Survey in Syracuse C G Murdoch Syracuse—p 1635
Coronary Thrombosis Relationship to Thrombo Angitis Obliterans M Sclar Brooklyn—p 1638
The New Pharmacopoeia W Coleman New York—p 1643
Radiology and the Radiologist of the Future T E Elliott Brooklyn—p 1647
Present Status of Laryngeal Tuberculosis Review of 245 Cases D I Frank and G D Wolf New York—p 1652
Orthopedic Aspects of Poliomyelitis One Hundred Cases Treated from Onset A J Schein New York—p 1661
Hypoparathyroidism with Pregnancy E A Baumgartner and A Cowles Newark—p 1668
Diabetes Mellitus Short Wave Diathermy and Office Surgery M C Ratzan Brooklyn—p 1671

Southern Medical Journal, Birmingham, Ala

30 963 1042 (Oct) 1937 Partial Index

- Clinical Significance of Mobile Colon M O Rouse and C O Paterson Dallas Texas—p 963
*Incontinent Patients in Chronic Hospital O R Langworthy J A Jarvis and L G Lewis Baltimore—p 969
Tube for Removal of Open Safety Pins from Trachea and Esophagus E N Broyles Baltimore—p 973
Roentgen Therapy in Skin Cancer H G F Edwards Shreveport La—p 974
Pernicious Malaria in Children Report of Twenty Four Cases J P Price Florence S C—p 991
Relation of Thyrotoxicosis to Emotions A McMahon St Louis—p 996
Pulmonary Embolism with Especial Reference to Acute Cor Pulmonale Report of Case J H Cannon Charleston S C—p 1002
Local Responsibilities in Communicable Disease Control J A Milne Jackson Miss—p 1015
Implantation in Ozena J I Kemler Baltimore—p 1021
Unusual Reaction from Typhoid Vaccine Given Intravenously in Case of Psoriasis S F Rosen Savannah Ga—p 1024
*Potassium Permanganate Poisoning Report of Fatal Case C Johnston Durham N C—p 1030

Incontinent Patients in Chronic Hospital—Langworthy and his associates studied twenty-one male patients, who were segregated in one ward for special care because of habitual vesical incontinence, in an attempt to arrive at some conclusion concerning the cause of the trouble in each case. The work was possible through urologic and neurologic cooperation. The prostate was palpated by rectal examination. A cystoscopic study was made when deemed desirable. Each patient was examined carefully from a neurologic point of view to determine as far as possible the anatomic injury to the central nervous system and all showed abnormalities pointing to injury of the central nervous system. The cases were divided into six groups (tabes spinal paraplegia due to syphilis, hemiplegia, diffuse cerebral damage, hemiplegia associated with signs of bilateral encephalic lesions and injury to the bilateral cortico-spinal tract) depending on the level of the damage in the brain and spinal cord. A considerable group of these individuals had

lesions which could be localized in the spinal cord, brain stem or internal capsule. In most cases the changes were bilateral. In the remainder there was diffuse cerebral damage with no changes in the striated muscle or in the reflexes which are considered characteristic of involvement of the cortico efferent pathways. In these patients the lesion must involve the highest correlation centers controlling vesical activity. A patient with changes in striated muscle characteristic of damage to the cortico efferent pathways bilaterally presented a fairly normal vesical reading. Abnormalities of the bladder may be produced by cerebral cortical lesions without abnormalities of striated muscle, and conversely the changes in striated muscle may be present without marked abnormalities in the graphic record. Even so, in all the cases showing changes of marked degree in the striated muscle, incontinence was present.

Caustic Action of Potassium Permanganate—Johnston reports a case in which death resulted from the caustic action of potassium permanganate in solid form, which caused necrosis of the tissues of the mouth and esophagus and finally erosion of the esophagus leading to a fatal hemorrhage. Severe tracheitis and bronchitis leading ultimately to bronchopneumonia, appeared also to have a part. Potassium permanganate although not usually regarded as a dangerous preparation, will cause severe damage to the tissues, and even death, when applied in concentrated form. In the only four fatal cases so far recorded it has been taken with suicidal intent.

Southern Surgeon, Atlanta, Ga

6 351 434 (Oct) 1937

- Glycoid Tumors of Uterus Review of 1 025 Cases Treated by Hysterectomy or Radium W D Haggard Nashville Tenn—p 351
Endometriosis of Umbilicus J G Pasternack New Orleans—p 363
Further Discussion of Supra Umbilical Transverse Incision R L Sanders Memphis Tenn—p 365
Diagnosis and Treatment of Malignant Tumors of the Breast J S Horsley Richmond Va—p 375
*Indications and Contraindications for Splenectomy Review of Cases Observed in the Clinic of the College of Medicine of the Ohio State University J H J Upham, Columbus Ohio—p 385
Surgical Treatment of Peptic Ulceration M Gage New Orleans—p 392
Urinary Tract Complications in General Abdominal Surgery A G Brenizer Charlotte N C—p 405
Suprahepatic (Subphrenic) Abscess E P Lehman and V W Archer University Va—p 407
Micrococci Tetragenus as Surgical Complication J H Blackburn Bowling Green Ky—p 422

Indications and Contraindications to Splenectomy—Upham reviews the work, on splenectomy, of Doan, Wiseman and Curtis in the clinic of the College of Medicine of the Ohio State University. There were thirty-one splenectomies, seventeen of which were for hemolytic icterus, without a single fatality although six patients were in acute crisis and two had less than 2 Gm of hemoglobin and appeared practically moribund when taken to the operating room. There also were four cases of Banti's disease, three of thrombopenic purpura, three of hypoplastic anemia and one each of lymphatic leukemia, polycythemia vera, myeloid leukemia and leukanemia. The conclusions drawn are: 1 The pathologic physiology of the spleen may be manifest through either or both of two mechanisms inhibitory and destructive—and may affect any or all of the circulating blood elements. 2 The spleen is the major pathologic agent in congenital hemolytic jaundice. 3 Splenectomy is indicated as a prophylactic measure against clinical exacerbations of excessive hemolytic activity in the chronic and subacute manifestations of the disease. 4 Splenectomy is the therapeutic procedure in acute hemoclastic crises. 5 The immediacy of the erythrocyte response following splenectomy in hemolytic jaundice is dramatic, occurring on the operating table. This autotransfusion removes the necessity for preoperative or postoperative transfusions. 6 Splenectomy is not contraindicated in properly selected cases of thrombopenic purpura in acute crisis, provided adequate preoperative blood transfusions are given. 7 In Banti's disease early splenectomy offers some hope of prolonging life. 8 In hypoplastic anemia theoretically splenectomy should be of value. 9 In lymphatic leukemia splenectomy may prolong life but cannot be considered curative. 10 The operation is contraindicated in myeloid leukemia and polycythemia vera.

Southwestern Medicine, Phoenix, Ariz

21 301 338 (Sept.) 1937

- Study of 1302 Obstetric Cases Two Maternal Deaths L M Miles, Albuquerque N M—p 301
 Longevity W M Branch El Paso Texas—p 306
 Treatment of Fractures at Sage Memorial Hospital C G Salsbury Ganado Ariz—p 312
 Traction in Fractures H T Southworth Jerome Ariz—p 314
 Pentothal Sodium Basic Intravenous Anesthetic E P Palmer Phoenix Ariz—p 316
 Undulant Fever Therapy Excellent Results from Typhoid Vaccine Intravenously L R Kober Phoenix Ariz—p 317
 Artificial Fever Therapy A General Review A N Epstein, San Francisco—p 319
 Functional Cardiovascular Disorders 'Cardiac Neurosis' W C Menninger Topeka Kan—p 324

Western J Surg, Obst & Gynecology, Portland, Ore

45 467 526 (Sept.) 1937

- Hormone Aspects of Sex Reversal States S J Glass and B J McKennon Los Angeles—p 467
 True Hermaphroditism in Man Case J M Essenberg and I M Feinberg Chicago—p 474
 Injection Treatment of Inguinal Hernia E L Sugar, Los Angeles—p 480
 *Evidence That Most Thyroid Disease Is Congenital W B Patterson H F Hunt and R E Nicodemus Danville Pa—p 486
 Unexpected Hyperthyroidism Postoperatively A L Lockwood Toronto—p 499
 Recurrent Hyperthyroidism N W Gillette Toledo Ohio—p 504

Study of Thyroid Disease—Patterson and his colleagues give results of experimental studies which they believe indicate that a large part of thyroid disease may be congenital, being due primarily to an iodine deficiency in the mother. The literature has been reviewed and work which gives evidence that this does occur has been included. The scope of their study of this problem was as follows: (1) The cholesterol content of the blood of a series of pregnant women and rabbits was determined at frequent intervals, (2) the cholesterol content of the blood of a number of human infants at birth and rabbit fetuses at term was also determined and (3) by experimental and clinical observations they attempted to correlate the relationship of maternal and fetal blood cholesterol to the activity and cytologic structure of the fetal thyroid. Blood cholesterol studies on pregnant rabbits revealed that rabbits, unlike human beings, develop a hypocholesteremia in the second and third trimesters of pregnancy. Total thyroidectomy in the nonpregnant rabbit produces a hypercholesteremia but in the pregnant rabbit it has no effect on the blood cholesterol. The blood cholesterol of fetuses of totally thyroidectomized rabbits was more than 100 per cent higher than that of fetuses of normal rabbits. The thyroids of fetuses of thyroidectomized rabbits were in a state of extreme hyperplasia, showing definite evidence of hyperactivity. The hypercholesteremia occurring in pregnant women was reduced to normal by a small daily dose of thyroid extract indicating that the hypercholesteremia of pregnancy is due to hypothyroidism. The single human fetus in contrast to the many fetuses of a thyroidectomized rabbit is unable to furnish sufficient thyroxine to combat maternal hypothyroidism, and therefore if maternal hypothyroidism exists before pregnancy it may become more marked during pregnancy, owing to the necessary increase in metabolism. When maternal hypothyroidism and hypercholesteremia exist, fetal hypothyroidism and hypercholesteremia are also present. There is little doubt that the human fetal thyroid reacts to fetal hypothyroidism by hyperactivity and hyperplasia just as does the rabbit fetal thyroid and that this hyperactivity during development leads to permanent thyroid damage. Histologically the human thyroid at birth is in a state of hyperactivity. All the pathologic types of thyroid disease have been produced in animals by varying the intake of iodine and the physiologic demands of thyroid tissue. The presence of fetal characteristics in the adult thyroid is due to a failure of maturation caused by the extreme hyperactivity and hyperplasia occurring during development. The occurrence of goiter in more women than men is due to the increased thyroid activity necessary in menstruation and pregnancy. The development of goiter in persons who have had an adequate iodine intake since birth is due to the presence of damage incurred by the thyroid before birth.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Anaesthesia, Manchester

14 141 184 (July) 1937

- Anoxia in Anesthesia T A B Harris—p 141
 Technique of Carbon Dioxide Absorption Methods E G Van Hoogstraten—p 150
 Case Illustrating Some of the Ways in Which Cyclopropane Differs from Other Anesthetics S Rowbotham—p 173

British Medical Journal, London

2 565 604 (Sept 18) 1937

- Study of Diet in Relation to Health Dark Adaptation as an Index of Adequate Vitamin A Intake Technique and Preliminary Results J R Mutch and H D Griffith—p 565
 Modern Methods of Treatment of Clubfoot D Browne—p 570
 Modern Methods of Treatment of Clubfoot E P Brockman—p 572
 Insulin and Hysteria F Kretschmer—p 574
 Aids in Diagnosis and Treatment of Ectopic Gestation W C W Nixon—p 579

Edinburgh Medical Journal

44 621 668 (Oct.) 1937

- Some Besetments of Midlife T A Williams—p 621
 Alcohol and the Motor Driver J Purves Stewart—p 633
 Debatable Tumors II Lymphosarcoma E K Dawson J R M Innes and W F Harvey—p 645
 Observations on Pulmonary Tuberculosis in Children J Houston—p 653
 *Tryptophan Reaction as an Aid to Early Diagnosis of Meningeal Tuberculosis H Baxter—p 663

Tryptophan Reaction in Meningeal Tuberculosis—Baxter used the tryptophan test as an aid in the diagnosis of forty-one cases of meningeal tuberculosis. The result is positive if, at the junction of the fluids, a delicate violet ring is formed, and is negative when no ring is observed or if the ring is brown. The result is termed pseudopositive in fluids that are purulent, xanthochromic or stained with blood. Lumbar puncture was performed in the forty-one cases and the fluids were centrifuged before the test was applied. As a result of the investigation the forty-one persons of varying ages and both sexes subsequently found to be suffering from meningeal tuberculosis were shown to react positively with the cerebrospinal fluid tryptophan test. For the purposes of control, thirty-two cases were used and their fluids tested. All save one were negative. All the patients with meningeal tuberculosis died. There is a definite interval of time between the demonstration of the positive tryptophan reaction and other confirmatory evidence. In some cases three punctures and laborious search under the microscope proved futile and only necropsy confirmed the diagnosis. The average duration of illness of the patients at the time of lumbar puncture when the tryptophan test was positive was eight days, and the average day of death proved to be the sixteenth day of illness. That the tryptophan test may be useful in an early stage of the illness is shown by the results of seven of the cases under review. These cases showed a terminal phase of meningeal infection. The history of onset of illness could be relied on, and the tryptophan tests proved positive in two cases on the second day of illness, in three on the third day and in two on the fourth day.

Indian Medical Gazette, Calcutta

72 521 584 (Sept.) 1937

- Observations on Prolapse of Uterus and Its Management in India J Chakraverti—p 521
 Recurrent Swelling of Parotid Glands Report of Case M Seim—p 526
 Malignant Cystic Hemangioblastoma of Cerebellum R V Morrison and P G Gollerkeri—p 528
 Malaria and Its Treatment by Synthetic Remedies Atabrine and Plasmochin R V Nayudu—p 531
 Study of 110 Cases of Dengue Fever in the Madras Penitentiary I Karamchandani—p 532
 Electrolysis in Purification of Concentrated Serum Anisoxin N P Chatterjee—p 534
 Prognostic Significance of Icterus Index in Lobar Pneumonia S M K. Malik and B Singh—p 538
 Apparatus for Leprosy Clinic A T Roy—p 544
 Cheap Sub-titule for Shadows Lamp for Operation Theaters N M Seim—p 545
 Health Unit Work Note W P Jacob—p 546

Irish Journal of Medical Science, Dublin

No 141 569 616 (Sept) 1937

- Greek Medicine J Bell—p 569
- Antidiphtheria Immunization D F Hanly—p 578
- Spontaneous Cardiac Rupture A R Parsons—p 586
- Myocardial Rupture P C Bresnahan—p 590

Journal of Mental Science, London

83 347 488 (July) 1937

- Mental Observation Wards Discussion of Their Work and Its Objects E U H Pentreath and E C Dav—p 347
- 'Temporary' Treatment Analysis of Thirty Cases L H Wootton and L Minski—p 366
- Acetarsol in Treatment of Late Congenital Syphilis Among Mental Defectives K C L Paddle—p 372
- *Acrocyanosis E S Stern—p 408
- Some Vasomotor Disturbances in Schizophrenia Note L Minski—p 437
- Schema for Examination of Organic Cases W Mayer Gross and E Guttman—p 440
- Iron Copper and Manganese Content of the Human Brain A H Tingey—p 452
- Undecided Compensation Claim Arising from Suicide of Voluntary Patient K K Drury and C E J Freer—p 461
- Syphilis in Mental Hospital Practice D Prentice—p 472

Acrocyanosis—Stern examined hundreds of cases of acrocyanosis, in many of which careful observations have been made over a period of years. Acrocyanosis is due to certain changes in the arterioles caused by continual cooling of the parts. The condition is not always permanent. To detect it in all cases, special methods have had to be used, revealing that it is more prevalent than has been thought. Acrocyanosis is a clinical entity that may affect the hands or feet or both. The mechanism of the reaction of normal skin to cooling by ice or ice water is shown to depend on an axon reflex. The etiology of acrocyanosis is frequent moderate cooling of the affected parts in conjunction with chilling of the body as a whole. The age limits are wide, most of the present patients were between 20 and 45 years of age. Its mechanism is a partial obstruction to the arterial blood supply of the skin of the affected parts. There is no evidence of venous obstruction. Anatomic changes in the arterioles can only be excluded by direct observation. The obstruction is shown to be due to an increase in the muscular tissue of the middle coat of the arterioles of the cutis vera and subcutaneous tissue of the affected parts. It is not a mere matter of arteriolar spasm. Fibrosis and edema also occur locally but are probably only secondary. There is no evidence of any pathologic changes in the blood, nervous system or endocrine glands. In severe cases recovery from attacks may occur only after days of warmth. Treatment to be of permanent value involves practically continuous warmth for months.

Journal of Tropical Medicine and Hygiene, London

40 209 220 (Sept 15) 1937

- *Microscopic Inquiry into Etiology of Dengue Sandfly and Yellow Fever A C Coles—p 209
- Pulmonary Lesions in Animals Produced by Virus of Lymphogranuloma Inguinale E von Harm and R Hartwell—p 214

Etiology of Dengue, Sandfly and Yellow Fever—Coles examined air-dried blood films from ten naturally infected patients suffering from severe dengue during the first, second and third day of the disease and from two volunteers who were inoculated with 0.3 cc of dried serum of infected blood, from yellow fever in monkeys and from three human cases of sandfly fever. Small free and intracorpuseular bodies were found in the blood of dengue, sandfly and yellow fever. The blood in these cases showed practically no evidence of anemia and the red blood corpuscles were in all cases regular in size, shape and staining reaction, and beyond the presence of a few punctate red cells in some of the films of blood from dengue fever not the slightest signs of pathologic red cells were found, and in no case was a single nucleated red corpuscle seen. The filtrable organisms in sandfly, dengue and yellow fever are quite different but probably closely allied. These intracorpuseular bodies agree in the following particulars: 1 They are easily stained by Giemsa and take about the same color. 2 All have much the same morphologic characters and show some internal structure consisting usually of more deeply stained dots or granules. 3 They are numerous in the blood in cases of dengue and yellow fever during the first three days and in

sandfly fever during the first twenty-four hours. 4 They all show evidence of undergoing developmental stages. The bodies found in dengue fever are on the whole the smallest, those in yellow fever are intermediate in size, while those in sandfly fever show considerably greater variations in size and contain many larger forms than the other diseases. The fact that the bodies in the corpuscles and in the plasma of dengue, sandfly and yellow fever are to be found only during what is known to be the most infective period, that they are then present in such enormous numbers and that, in the case at least of dengue, they diminish and disappear in a very short time suggests that they are definitely associated with and are probably the actual causal virus of these diseases.

Lancet, London

2 609 664 (Sept 11) 1937

- The Psychologic Factor in Cardiac Pain G Bourne R B Scott and E Wittkower—p 609
- Study of Anatomy of Vertebral Thrombosis Reports on Two Cases D Sheehan and G E Smyth—p 614
- Bulgarian Treatment of Postencephalitic Parkinsonism F J Neuwahl and C C Fenwick—p 619
- Minor Points in Diphtheria Immunization H A Raeburn—p 621
- *Ephedrine in Treatment of Enuresis R W Brookfield—p 623
- Cushing's Syndrome in a Mulatto A P M Page and L V Roberts with histologic report by J H Biggart—p 625

Ephedrine in Treatment of Enuresis—Brookfield administered ephedrine in thirty-eight consecutive cases of enuresis over periods up to several months. The enuresis ceased in ten cases, and there was improvement in fourteen others. The ephedrine sometimes caused restlessness and other side effects, but these were seldom seen in older children of phlegmatic type, some of whom seemed to have an unusual tolerance to the drug. Those cases in which enuresis persists throughout school life only to cease in the late teens or early twenties are the ones in which ephedrine appears to be of most value. To such sufferers in particular ephedrine offers a prospect of permanent cure, and it is worthy of trial in the majority of younger subjects, many of whom will be similarly benefited. In adopting the method the presence of a urinary infection is excluded by examination of the urinary deposit. Half a grain (0.032 Gm) of ephedrine alkaloid in tablet form is given at bedtime. The dose is increased by half a grain every three to four nights until in certain instances as much as 5 grains (0.32 Gm) is taken. In those cases which respond favorably it is found that enuresis at first becomes less frequent and then, as the dose is increased, disappears altogether. The fact that many sufferers from enuresis are able to tolerate doses of ephedrine considerably in excess of those usually regarded as maximal lends support to the view that enuresis is sometimes a manifestation of a constitutional type, in which the parasympathetic-sympathetic balance is weighted in favor of the parasympathetic system. In this way considerable enhancement of sympathetic activity is required before the hypertonic parasympathetic can be opposed adequately. Thus a relatively large amount of ephedrine is utilized and there is no excess to give rise to unwelcome side effects.

South African Medical Journal, Cape Town

11 597 628 (Sept 11) 1937

- National Health Insurance F Daubenton—p 599
- Various Forms of Anemia in Nurslings J H P Jonxis—p 603
- Rheumatic Heart Disease E E Wood—p 606
- The Dyspepsias Their Causes and Treatment P Leftwich—p 607

Japanese Journal of Experimental Medicine, Tokyo

15 197 264 (Aug 20) 1937

- Study on Variation of Bacillus Paratyphus B K Hayakawa—p 197
- Influence of Cell Constituents of Kidney and Other Organs on Growth of Kidney Tissue in Vitro Y Kusano—p 209
- Studies on Serodiagnosis on Tuberculosis by Complement Fixation Reaction IV Concerning the Critique of Various Antigens for Tuberculosis T Sugai—p 235
- Id V Concerning Determination of Antigen Dose and Variation Method for Complement Fixation Reaction After Browning T Sugai—p 243
- Id VI Concerning Complement Fixation Reaction with Witebsky-Klingenstein-Kuhn's Antigen and Summary of All My Reports About Studies on Serodiagnosis of Tuberculosis by Complement Fixation Reaction T Sugai—p 249
- Studies on Experimental Infection of Guinea Pigs with Corynebacterium Diphtheriae I Mechanism of Infection S Setiya—p 255

Annales de Dermatologie et de Syphiligraphie, Paris

S 689 760 (Sept.) 1937

Lupus Erythematosus of the Tongue of Mucous Membrane of Cheeks of Lower Lip Subsequent Early Epithelioma Coexistence of Psoriasis P Le Coulant—p 689

*Comparative Capillaroscopic Picture of Primary Manifestation of Syphilis and of Soft Chancre N W Nicolas and Mme T N Liberman—p 700

Capillaroscopy of Venereal Lesions—Nicolas and Liberman point out that capillaroscopy is a valuable complementary method for clinical investigation not only in internal medicine but also in dermatology. Following a brief review of the literature on capillaroscopy in dermatologic disorders they describe their own capillaroscopic investigations on soft chancre and the lesion of primary syphilis and present the most characteristic aspects of the two processes. The circumference of the syphilitic lesion presents a faded tinge, whereas that of soft chancre has vivid colors. In the skin surrounding the syphilitic region the capillary loops have a tendency to be vertical, whereas in soft chancre they are horizontal, their summits being directed toward the center of the ulcer. The outline of the syphilitic lesion is clear cut and gives the impression of a deep furrow, but in soft chancre it is indicated by a radius of a whitish rose color. The fundus of the syphilitic lesion is reddish, but the bed of the soft chancre is yellowish brown. In the syphilitic ulcer hemorrhages are frequent, whereas in the soft chancre they are not. The authors admit that further studies will be necessary to perfect the technic, but they think that in some cases it can serve as a complementary method for the diagnosis of venereal disorders. The method has the disadvantage that it cannot be used in all localizations and that it cannot be employed in women.

Journal de Medecine de Lyon

IS 519 548 (Oct 5) 1937

Allergy in Rheumatic Disorders G Mouriquand—p 519

*Electrocardiographic Aspects of Angina Pectoris R Froment and A Vachon—p 531

Electrocardiographic Aspects of Angina Pectoris—Froment and Vachon made electrocardiographic studies on thirty-one patients with angina pectoris which confirmed the frequency of the negativity of the T wave of the ventricular complex in leads 1 and 2 during the attack. The comparison of the electrocardiogram and of clinical and roentgenologic aspects in each of these thirty-one patients permits the following conclusions: 1 The electrocardiographic changes and especially the isolated negatization of the T wave in leads 1 and 2 as a rule exist in the anginous syndrome which anamnesis and examination permit attributing to coronary arteritis. 2 These electrocardiographic changes are the exception in the types of angina the coronary origin of which appears clinically doubtful (only one case with negative T wave in nine cases of this type), cases of evident "neurotic" pseudo anginous pains being excluded. 3 In patients with syphilitic aortitis with angina these changes likewise have been observed rarely. The authors show that the electrocardiographic aspects of angina pectoris are important for the diagnosis. The electrocardiographic record may indicate the organic character of the pain and may permit the affirmation of its coronary origin. In the cases in which the etiology remains doubtful, it may point to a coronary arteritis. Regarding the prognostic significance of electrocardiography in angina pectoris the authors say that it is derived from the notion of coronaritis and from the importance of the greater or lesser qualitative modifications of the cardiac contraction. It gives the possibility of determining the evolutionary or stable character of the electrical changes and thus of the coronary disorders.

Presse Medicale, Paris

45 1433 140 (Oct 13) 1937

Cancer of Breast with Skeletal Generalization Treated with Tele-roentgen Therapy F Trumoheres and L Mallet—p 1433

*Metabolism of Amino Acids in Gastroduodenal Ulcers K Herriot—p 146

Metabolism of Amino Acids and Gastroduodenal Ulcer—Herriot points out that Aron and Weiss introduced amino acids especially histidine into the treatment of gastric and duodenal ulcers and then he describes his own experiences in 160 cases of gastric and duodenal ulcers in which he resorted to histidine treatment. The favorable therapeutic results

obtained in these cases induced him to study the metabolism of the amino acids in patients with gastric and duodenal ulcers. The mode of action of histidine has been given various interpretations. Aron and Weiss suggested that the ulcerous lesions result in a disturbance of the metabolism, the cause of which must be searched for in a deficiency of the amino acids. Other authors, however, ascribed the action of histidine chiefly to its analgesic effect. The theory of Weiss and Aron raised the question of the clinical significance of the amino acids. In the intestine the albumins are decomposed into amino acids and the blood stream continually contains such acids. The author determined the amino acid content in the venous blood and studied the reaction produced by the intravenous injection of amino acids. He made these tests with the method of Fohn and with the modification suggested by Horejsi and Mecl. He observed neither augmentation nor diminution of the free amino acids in the venous blood of 100 patients and he was unable to detect a difference in patients with gastric and duodenal localization of the ulcer, although the therapeutic effect of the histidine was usually more rapid in cases of gastric ulcer. In studying the reaction produced by the intravenous injection of amino acids, he found that in the patients who were given histidine the blood tests revealed curves which were similar to those which Bufano had observed in normal persons. Patients who were given a solution of histidine monochlorohydrate showed, fifteen, thirty, sixty and 120 minutes after the administration the same values as before. Thus the patients with gastric and duodenal ulcers react in the same manner as do persons without such disorders. In the conclusion the author points out that, although he was able to verify the favorable therapeutic effects of histidine in gastric and duodenal ulcers, he was not able to corroborate Aron's theory of the mode of action. He is of the opinion that the sedative action rather than the effect on the amino acids is the important factor. He thinks that the sedative action of the histidine is borne out also by the rapid disappearance of the pains after the administration of small doses and the favorable therapeutic results obtained in gastritis and in nonulcerous gastric disorders.

Schweizerische medizinische Wochenschrift, Basel

67 942 960 (Oct 2) 1937 Partial Index

Prophylaxis and Therapy of Whooping Cough with Vaccine A Hottinger—p 947

*Acute Peritoneal Syndrome as Hypersensitivity Reaction Problem of Acute Serous Peritonitis E Melchior—p 950

Treatment of Alcoholic Addicts and Psychiatric Policlinics J Wyrsch—p 951

Acute Peritoneal Syndrome as Hypersensitivity Reaction—Melchior reports a case which demonstrates that acute serous peritonitis may be the dominating partial manifestation of a general vasomotor reaction of hypersensitivity. A man aged 22, suddenly developed from unknown causes, severe symptoms indicative of an acute perforation of the stomach, which might have been taken as an indication for an immediate laparotomy. That such an intervention would have been superfluous is proved by the fact that the abdominal signs subsided almost as rapidly as they had appeared. Certain accompanying symptoms throw light on this process. It was found that a severe dermatographism existed during the acute abdominal phase. Moreover, infusion of physiologic solution of sodium chloride into the subcutaneous connective tissue produced a hypersensitivity reaction, presenting the aspects of an acute phlegmon. On the basis of these observations the author assumes that the peritoneal symptoms were the manifestation of a serous peritonitis which was a part of the same reaction that elicited the severe dermatographism and the pseudophlegmon. An alimentary noxa was presumably the causal factor. The character of the abdominal symptoms—the sudden onset of the pains their uniform persistence and their spreading over the entire abdomen—mitigates against the existence of simple intestinal spasms and indicates an inflammatory involvement of the peritoneum. The author points out that this interpretation is not entirely new and directs attention to analogous conditions such as the serous ascariasis peritonitis, which he regards as a reaction to the toxic products of these enterozoa. Further he suggests that the frequent serous exudates of acute appendicitis may be a hypersensitivity reaction to bacterial toxins and that visceral symptoms accompanying attacks of urticaria may find their explanation in this manner.

Archivio Italiano di Chirurgia, Bologna

45 559 657 (May) 1937

- Pure Muscular Pyloric Hypertrophy in Adults Cases E Savarese—p 559
Suppuration of Hermal Sac Cases A de Simone—p 580
Arthrodesis of Shoulder by Putti's Technic D Logròscino—p 591
*Bactericidal Power of Blood Before and After Splenectomy L Bacca
rini and C Marzocca—p 627
Surgical Treatment of Habitual Luxation of Patella P Pariset—p 641

Bactericidal Power of Blood—The experiments of Bacchini and Marzocca showed that the whole blood of dogs and rabbits has bactericidal power on staphylococci and colon bacilli before splenectomy. It loses its power immediately after splenectomy but regains it between the tenth and thirtieth days. It becomes normal again after thirty days. According to the authors anesthesia plays no part in the changes of the bactericidal power. The spleen is not indispensable for the production of the phenomenon. Splenectomy is followed by a reaction of the reticulo endothelial system which results in hypertrophy of the lymph nodes in the mesentery and in certain tissues in the peritoneal cavity. The hypertrophic lymph nodes take on a structure similar to that of the spleen and they develop vicariously the functions of the spleen with consequent restoration of the bactericidal power of the blood.

Giornale Veneto di Scienze Mediche, Venice

11 321 392 (June) 1937

- Late Clinical Results of Cholecystectomy Made During Last Three Years in Cholecystitis G Form—p 321
Experimental Anaphylactic Cachexia F Cagnetto—p 327
*Sulfanilamide (Prontosi) in Treatment of Erysipelas E Marzollo—p 340
Fatal Spontaneous Subarachnoidal Hemorrhages in Young Persons Cases M Venezoni—p 368

Sulfanilamide in Treatment of Erysipelas—Marzollo administered sulfanilamide to twenty-six patients who were suffering from acute erysipelas. The group included infants, children and adults of both sexes. Tablets of 0.3 Gm of sulfanilamide each were administered. Infants were given half a tablet, children and adults one tablet, and in rare cases adults were given two tablets at a time. The tablets were dissolved in a spoonful of water and administered by mouth two or three times a day shortly after ingestion of milk or broth. The treatment was administered for three or six days. In rare cases the disease was controlled by administration of the drug for only one day or it was necessary to give it for as long as seven or eight days. In the latter case the dose was cut to half of that which was administered for the first three days. In all cases the treatment was associated with local applications of 10 per cent ichthammolated petrolatum. The treatment is well tolerated. Fever abates and leukocytosis diminishes during the first or second day of the treatment or, in rare cases, during the third or fourth day. As a rule, fever disappears by crisis (88 per cent in the cases of the author). The cutaneous symptoms improve as soon as fever abates. The author compared the results obtained from administration of sulfanilamide with those obtained in a group of forty patients suffering also from acute erysipelas and treated by vaccines, nucleoproteins or colloidal silver. The disease follows a more even and uncomplicated evolution and the duration of fever and of the disease is shorter in patients treated with sulfanilamide than in those who are given other treatments. The author considers sulfanilamide the treatment of choice in erysipelas, especially in infants.

Policlínico, Rome

44 473 532 (Oct 1) 1937 Medical Section

- Crisis of Blood in Rheumatic Fever A Ferrannini and A Crotti—p 473
*Intensification of Cutaneous and Visceral Allergy from Histamine Injection F Corelli—p 491
Action of Anterior Hypophyseal Extract (Lipotrina) on Metabolism of Carbohydrates C Borruo—p 501
Attempts to Induce Appearance of Spirochetes in Blood of Patients Suffering from Relapsing Fever D Sibilia—p 530

Intensification of Visceral and Cutaneous Allergy—Corelli administered a subcutaneous injection of 0.8 or 1 mg of a solution of histamine to several patients presenting cutaneous or visceral diseases of an allergic origin. In fourteen cases of erythema nodosum, of tuberculous or rheumatic fever etiology, the histamine injection was followed by intensification

of the preexisting erythematous lesions and appearance of new lesions. The reaction takes place shortly after the injection and lasts for thirty or forty minutes. It develops also in the skin of patients who are suffering from urticaria, Quincke's edema, serum disease, exudative erythema and certain exanthematous diseases of children and adults. The subcutaneous injection of histamine causes intensification of skin and intradermal positive tuberculin and other reactions and a transient aggravation of lesions of pulmonary tuberculosis. It induces an increase of bilirubinemia and of provoked glycemia in catarrhal jaundice and of albuminuria and azotemia in acute diffuse glomerulonephritis. The author points out the possible value of the reaction in the clinical and differential diagnosis of allergic diseases. He discusses the mechanism of production of the reaction, which, according to him, is due to a nonspecific dilating action of histamine on the permeability of the capillaries of inflamed tissues.

Prensa Medica Argentina, Buenos Aires

24 1819 1864 (Sept 22) 1937

- *Influence of Lateral Decubitus on Rest of Lung Thoracometric and Roentgen Study R F Vaccarezza G Pollitzer and J B Gomez—p 1819
Embolus of Superior Macular Artery E Adroque and A Rea—p 1832
Pleurisy and Granuloma in Primary Infection O Garre—p 1836
Physical Bases of Roentgen Therapy C H Niseggi—p 1839

Influence of Lateral Position on Rest of Lung—Vaccarezza and his collaborators studied the influence of lateral positions on rest of the lung in twelve normal adults, of both sexes, by means of thoracometry and x-ray examination of the thorax. They found that the volume of the lung in the side on which the patient lies is smaller, both during inspiration and expiration, than it is when the position is changed to the opposite side. It is smaller also than it is when the person lies in the dorsal position. The difference between the volume of the lung in inspiration and in expiration is greater for the lung in the lower than in the upper position and smaller for the lung in the lower position than it is when the patient lies on his back. However, the difference takes place within volumetric figures which are smaller for the lower lung in comparison to those of the lung in the upper position or when the patient lies on his back. The lower lung is in a condition of elastic hypotension by which the organ is at greater rest in the lower than in the upper and dorsal positions.

Archiv für klinische Chirurgie, Berlin

190 1232 (Sept 15) 1937 Partial Index

- Experiences with Electrotomy of the Hypertrophied Prostate C H Schroder—p 1
*Xanthomatous Inflammation in Surgical Diseases and in Metabolic Blastomas M Biehl—p 33
Blood Alkalosis in Malignant Tumors J Gasinski—p 73
Injury to Mammary Areola and Progressive Necrosis After Plastic Operation on the Breast H F O Haberland—p 87
Multiplicity of Gastroduodenal Ulceration M Tomoda and G Takaura—p 116
*Surgical Results with 433 Cases of Gastroduodenal Ulceration in Japan M Tomoda—p 134

Xanthomatous Inflammation in Surgical Diseases—Biehl presents a study of fifteen cases of secondary xanthomatous alterations observed in most varied surgical diseases such as pyonephrosis, renal tuberculosis, chronic cholecystitis, simple chronic mastitis, perinephritis, subphrenic abscess, osteitis fibrosa, synovitis of the knee joint, chronic osteomyelitis, brain abscess and endothelial sarcoma. The cause of the so called xanthomatous giant cell tumors is to be seen in external trauma or in a hypothetic metabolic trauma. It is assumed that there is a disturbance of the lipid or cholesterol metabolism. Frequently it is of a local character. The giant cells of these xanthomatous granulomas are to be regarded as a special variety of foreign body giant cells which originate from the fixed connective tissue as well as from the reticulo-endothelial system. The so called foam cells or xanthoma cells which give these pseudotumors their particular appearance, develop exclusively from the reticulo endothelial cells. These cells point to a local metabolic disturbance. Certain xanthomatous giant cell tumors are too highly differentiated to be considered benign tumors. Newer studies of the giant cell tumors in osteitis fibrosa contain hints regarding the

nature of such blastomas. According to Puhl, the localized brown tumors, cysts and giant cell tumors of the bone marrow are benign mesenchymal tumors of nondevelopmental origin. In the author's opinion this should hold true for similar tumors of tendon sheaths, joints and so on. These tumors, however, differ from all others by the alteration of their metabolic activity, particularly that concerned with the lipid metabolism. The author demonstrated that not only the foam cells but also the ordinary tumor cells contain an unusual amount of lipoids. Because of this predisposition on the part of these tumor cells to abnormal metabolism in a general sense and to the lipid metabolism in particular, the author proposes a generic name of "metabolic blastoma" for all such tumors, with a specific designation of "metabolic xanthoblastoma." Hypercholesterolemia is not a necessary condition, since the tumor cells themselves are capable of increasing the local lipid content. The hemosiderin deposits in the stroma of these tumors are caused by hemorrhages from small vessels resulting from a toxic effect.

Gastroduodenal Ulceration in Japan—In Japan, according to Tomoda, 378 cases of gastric ulceration were found in 8,099 necropsies, or 4.66 per cent, and thirty-two cases of duodenal ulcer in 6,120 necropsies. In Europe and in America gastric ulcer occurs with greater frequency in women, while in Japan both gastric and duodenal ulcers occur with much greater frequency in men than in women. Their operative mortality with gastro-enterostomy amounted to 5.2 per cent and the proportion of radical cures to 80 per cent. There was only one instance of a peptic jejunal ulcer. Among thirty-three patients on whom operation for exclusion was performed, there was one operative death. Complete cure was found in 100 per cent of the twenty-three cases followed up. Of 135 patients subjected to partial gastric resection, twelve died (8.7 per cent) and seventy-five of eighty-three followed up (90.36 per cent) were cured. There was one case of peptic jejunal ulcer. Multiple ulcers were demonstrated in 4.8 per cent of the gastro-enterostomies and in 26.4 per cent of the gastric resections. This suggests the ease with which multiple ulcers may be overlooked in the course of a gastro-enterostomy. The results after gastro-enterostomy, operation for exclusion, or partial gastric resection do not depend on the alteration of the gastric resection. The frequency of malignant degeneration of the gastric ulcer amounted in their material to 6.5 per cent, while in the patients subjected to partial gastric resection as a separate group it was 16.1 per cent. As a result of experience during the last sixteen years the author considers partial gastric resection the best method. Operation for exclusion is preferable to gastro-enterostomy for duodenal ulcers that cannot be resected. Gastro-enterostomy is to be reserved for ulcers located in the pylorus or its vicinity, particularly when complicated by stenosis.

Beitrage zur klinischen Chirurgie, Berlin

166 177 336 (Sept 15) 1937 Partial Index

- *Question of Active Surgical Intervention in Fractures of Base of Skull A Fehr and E J Meier —p 177
- Operative Treatment of Intramural Ureteral Stenosis G Sommer —p 200
- Mineral and Vitamin A Blood Level in Struma of Tyrol R Riebler —p 211
- *Mesenteric Lymphadenitis E Hertel —p 231
- Isolated Tears of Mesentery Following Abdominal Trauma A Vasilu and J Sabaila —p 273
- Treatment of Lesions of the Meniscus W Jehn —p 278

Surgery in Fractures of Base of Skull—Fehr and Meier present an analysis of the results of conservative treatment of the fractures of the base of the skull. In seventeen years (from 1919 to 1935), 417 patients with fracture of the base of the skull were admitted to the university clinic of Zurich. The conservative treatment consisted of rest in bed for from three to four weeks, application of an icebag and administration of methenamine. The lumbar puncture for diagnostic purposes as well as to influence the rising intracranial pressure was widely employed. With the exception of a single case of meningitis which developed following the lumbar puncture and was associated with a sudden closure of the aqueduct of Sylvius there were no untoward symptoms observed as the result of the procedure. The authors likewise observed good results from

intravenous administration of hypertonic solution of dextrose. As a rule, from 40 to 100 cc of a 20 to 40 per cent solution frequently with the addition of methenamine, was administered daily. The total mortality amounted to 32.4 per cent. Among 383 cases in which conservative treatment was resorted to there was a mortality rate of 28.3 per cent. Thirty-two patients were submitted to operative intervention, with a mortality rate of 81 per cent. The treatment of basal fractures, in the opinion of the authors, is the domain of the surgeon in cooperation, however, with the neurologist and the eye and ear specialist. The treatment is essentially conservative, there being no primary indications for surgical intervention. A prophylactic intervention for fractures of the anterior or the middle fossa is not to be recommended in view of the fact that prevention of an intracranial inflammatory complication is a matter of uncertainty. In fractures of the anterior fossa an operation is indicated if there is danger of a spreading infection from a demonstrated infection of the nasal cavities. In fractures of the middle fossa it is of great importance to ascertain whether one deals with a longitudinal or with a transverse fracture of the petrous portion of the temporal bone. Recovery without complications takes place as a rule in the longitudinal fractures even when complicated by middle ear infection or by leakage of the cerebrospinal fluid. In transverse fractures associated with an opening into the inner ear, there is grave danger of meningitis. Operative intervention is indicated in fractures of the middle fossa when complicated by middle ear infection or in the presence of a beginning meningitis. Among the late complications there were abscesses of nasal origin as well as late abscesses after longitudinal fractures of the petrous portion. Both complications occur seldom and both are amenable to successful operative treatment. Late meningitis is a more frequent occurrence following transverse fractures of the petrous bone. Patients with a fracture of the labyrinth require, therefore, continued otologic observation for possible complications.

Mesenteric Lymphadenitis—In an extensive review of the subject of mesenteric lymphadenitis, Hertel asserts that non-specific inflammation may involve the mesenteric lymph nodes as well as those of any other region. Infections and toxic substances reach these nodes by way of the lymphatic channels as a rule from the intestine or from the appendix, frequently in the presence of a sore throat and exceptionally by way of the blood vessels. The responsible local structure, such as the appendix, for example, is frequently not involved. The infection may begin as a primary lymphangitis. Acute, subacute or chronic lymph node infection may give rise to considerable peritoneal manifestations. While the lymph node infection is secondary, clinically it may dominate the picture. The term mesenteric lymphadenitis is justified in the opinion of the author. The diagnosis is difficult but possible in occasional instances. Obscure abdominal symptoms are not infrequently the result of nonspecific disease of the mesenteric lymph nodes. The removal of the appendix and, in certain cases, the removal of the infected lymph nodes of the ileocecal angle are indicated. In cases preceded by angina, tonsillectomy is indicated.

Klinische Wochenschrift, Berlin

16 1297 1336 (Sept 18) 1937 Partial Index

- Hyperpyretic Articular Rheumatism T Fahr —p 1302
- *Survival of Spirochetes of Syphilis of Recurrent Fever and of Rat Bile Fever in Fluid Nitrogen (Temperature —196 C) and Influence of Other Low Temperatures on These Micro-Organisms F Jahnke —p 1304
- Clinical and Experimental Contributions to Problem of Thyroid Diencephalon F Hoff G Gentzen and H Klemm —p 1305
- *Occurrence and Significance of Coproporphyrin (Deuteroporphyrin) with Especial Consideration of Gastric Carcinoma F Beckermann and H Schulke —p 1311
- Fractures and Vitamin C Economy H J Lauber H Nafziger and T Berin —p 1313
- *Phagedenic Ulcer of Skin of Chest on Basis of Cutaneous Diabetes E Urbach —p 1315

Survival of Spirochetes in Fluid Nitrogen—In a preliminary experiment Jahnke determined that the spirochetes of recurrent fever as well as the trypanosomes of dourine survive after having been placed for twenty minutes in fluid nitrogen that is after having been exposed to a temperature of minus 196 C (—320 F). The main experiment consisted in exposing to the influence of fluid nitrogen for two weeks spleen

and liver of mice which had been infected with recurrent fever, dourine or rat bite fever, as well as pieces of syphiloma from rabbits. After the organs were thawed again, inoculation experiments still produced positive results in the case of the different spirochetes (recurrent fever, rat-bite fever and syphilis) but the trypanosomes proved no longer infectious. It is noteworthy that the spirochetes not only tolerate prolonged storage at minus 196 C but also that they tolerate the sudden reduction from room temperature to the temperature of fluid nitrogen, that is, a drop of 220 degrees C (396 F) and again the sudden increase of temperature by the same number of degrees. The author conducted these and other experiments in order to detect a simple procedure for the conservation of spirochetes and trypanosomes. Although he did not realize this aim, his experiments proved the great resistance of spirochetes to extremely low temperatures.

Significance of Coproporphyrin—Beckermann and Schulke demonstrate that coproporphyrin is a comparatively frequent constituent of feces. Its presence in the human intestine proves only that autogenous or heterogenous blood pigment has reached the intestine. To conclude from its presence its origin in autogenous blood, blood pigment or hematin is permissible only if the food has been free from heterogenous blood or hematin. Moreover, even if the autogenous origin of the coproporphyrin has been proved, it cannot be determined whether the blood originated from a benign or malignant lesion of the mucosa, so that a positive coproporphyrin test does not indicate whether ulcer or carcinoma exists. However, the authors show that the examination for the presence of coproporphyrin is too complicated to deserve consideration as an auxiliary method of examination.

Phagedenic Ulcer on Basis of Cutaneous Diabetes—Urbach reports the history of a man, aged 53, who developed a phagedenic ulcer on the chest. About three weeks before hospitalization the patient had first noted a red area over the distal part of the sternum. Later there developed slight secretion and scab formation. Conservative treatment was begun at this time, but it did not arrest the progressive ulceration. Polydipsia and polyuria were overlooked, but since a brother and sister of the patient had diabetes the blood sugar content was determined and revealed a mild increase. However, a sugar tolerance test revealed severe diabetes. In view of the phagedenic character of the ulceration a cutaneous diabetes was thought of. This condition is characterized by cutaneous disorders (furuncles, ulcerations, eczemas, pruritus, abscesses of the sweat glands) that are refractory to treatment, by high sugar content of the skin but normal sugar content of the blood, while the patient is fasting, and by the fact that the cutaneous disorder is favorably influenced by restriction of the carbohydrate intake combined with insulin therapy. In the reported case the ulceration proved refractory to all measures until an antidiabetic diet and insulin therapy was instituted. Under the influence of the latter measures, further spreading of the ulcer was arrested and it was finally cured. The author says that the phagedenic ulcer resembled gangrene but could be differentiated from this condition by the complete absence of a bacterial flora, by the demonstration of the diabetic disturbance and by the efficacy of the antidiabetic treatment.

Zeitschrift für klinische Medizin, Berlin

132 577 704 (Sept 9) 1937 Partial Index

Periarthritis Nodosa Case Observed for Fourteen Years A Heinrich —p 577

Dietetic Modification of Metabolism in Hepatosplenomegalic Lipoidosis M Burger W Schrade and H Landers —p 594

Electrocardiogram and Convalescence H E Kohler —p 613

*Relations Between Metabolism and Migraine Elisabeth Franck —p 623

Results of New Investigations on Action of Strophanthin K Gotsch —p 631

*Relative Viscosity of Blood Serum in Persons With and Without Hepatic Disorders and Its Relation to Protein Content and Its Fractions H Kaunitz and H Kent —p 670

Atypical Electrocardiograms in Acute Stage of Myocardial Infarct L Zwilling —p 689

Relations Between Metabolism and Migraine—Franck reports observations on eight patients with migraine who were carefully observed and frequently examined. It was found that six of them had a hereditary history of migraine. Hepatic and biliary disturbances were observed in five cases. The func-

tion of the pancreas was investigated in four of the patients, and three of these proved to have a hypofunction of the pancreas. Retention of water was observed in five of the patients. In all patients an increase in the urobilin bodies of the urine was observed during the attack of migraine. The regularity of the increase in the urinary urobilin is regarded as an indication of a disturbance in the intermediary metabolism of the liver. The author suggests the following development of an attack of migraine: the autointoxication originating in the liver impairs especially the brain. A cerebral edema results. Moreover, disturbances in the cerebral blood perfusion which, judging by the attack-like development of migraine, doubtlessly play a part in migraine, likewise can be explained as resulting from hepatic autointoxication. To be sure, the author does not want to imply that migraine is always caused by a hepatic disorder, for, as already indicated, other factors, such as heredity, seem to play a part.

Viscosity of Blood Serum in Hepatic Disorders—Kaunitz and Kent investigated the relative viscosity of the blood serum in 152 persons without hepatic disorders and in ninety-five patients with icterus and compared it with the total protein content of the serum and with the albumin/globulin quotient. The aim was to determine whether changes in viscosity that are not caused by quantitative deviations in the serum protein fractions occur in patients with hepatic disturbances. In the "normal" cases it was found that among the patients with high protein values, there is a higher percentage of low albumin/globulin quotients than among those with low protein values. This surprising fact does not apply to serums of patients with nephritis and with hepatic disease, in the majority of whom the albumin/globulin quotient is low. The relative viscosity of the serum was nearly always greatly increased in cases of cavernous phthisis and extrapulmonary tuberculosis, whereas the values were generally normal in the benign, fibrous forms of tuberculosis. The increase in the relative viscosity was especially pronounced in patients with hepatic cirrhosis. In catarrhal icterus and in disorders in which the icterus was due to mechanical obstruction, the cases with an especially severe impairment of the hepatic parenchyma showed a noticeable increase in the relative viscosity. In the course of studies on the relations between the Takata test, the albumin/globulin quotient and the relative viscosity, it was found that, in one third of the cases showing a positive Takata test, the albumin/globulin quotient is above 1, that is, in a large number of these cases the positivity cannot be caused by a relative increase in globulin. A great increase in the relative viscosity of the serum was observed in twenty-six of forty-one cases. The authors point out that this, in connection with some of their earlier observations, supports the opinion that for the development of a positive Takata reaction it is necessary that the serum protein bodies undergo also qualitative changes. Another observation in the course of the Takata reaction was that it was positive not only in hepatic cirrhosis but also in many cases of the severe forms of tuberculosis. The authors reach the conclusion that many deviations from the normal serologic reactions which occur in hepatic diseases are caused by the "pathologic" protein bodies that are demonstrable in these diseases.

Zeitschrift für Tuberkulose, Leipzig

78 225 304 (Aug) 1937 Partial Index

*Testing of Respiratory Function by Means of Histamine Tolerance Test J Schlosser —p 225

Significance of Vitamin C Metabolism in Pulmonary Tuberculosis H Gogga and H Scholz —p 233

Refilling of Pneumothorax in Evening in Work Therapy of Pulmonary Tuberculosis H Schoenemann —p 237

Fundamentals of Therapy of Tuberculosis Maria von Babarczy —p 239

Testing of Respiratory Function by Means of Histamine Tolerance Test—Schlosser says that a good test for the respiratory function should provide information about the lung as the organ of diffusion for respiratory gases. He discusses the method of Heymer. After the values for pulse, blood pressure, vital capacity and respiratory pause have been determined, the subject is given a subcutaneous injection of 1 cc of a preparation which contains 1 mg of histamine. Ten,

twenty and thirty minutes after the injection the values for pulse, blood pressure, vital capacity and respiratory pause are determined again. Heymer found that in healthy persons the injection of histamine neither shortens the respiratory pause nor reduces the vital capacity, that is, healthy persons have sufficient respiratory and circulatory reserves to compensate for the impairment by histamine. In patients with pulmonary and circulatory disorders, however, the injection of histamine always results in a reduction of the vital capacity and in a shortening of the respiratory pause. The author employed Heymer's histamine method for testing the respiratory function of 188 men in a sanatorium for tuberculous patients. This material included all forms of tuberculosis. He found that the test is a valuable aid in determining the advisability of collapse therapy and in testing the working capacity of a tuberculous patient. It has the advantage that it requires no special apparatus. All that is needed is a spirometer, a stop watch and a blood pressure apparatus. The only slight disadvantage is that it cannot be employed without the cooperation of the patient.

Polska Gazeta Lekarska, Lwów

1G 761 780 (Oct. 3) 1937

*Action of Hormone of Hypophysis and of Hypotonic Solution on Vasomotor Center—A. Seligsohn—p. 761
Changes in Lymph Nodes of Neck and in Tonsils in Tuberculous Organism and in Other Diseases with Relation to Malignant Lymphogranuloma—J. Bogner—p. 764
Tuberculosis of Breast—Sallie Hoben—p. 767

Action of Hormone of Hypophysis on Vasomotor Center—Seligsohn's experimental research was made on dogs anesthetized with paraldehyde by way of the stomach in doses from 125 to 135 Gm per kilogram of body weight, or with urethane by intracutaneous injections of 18 Gm per kilogram of body weight. He selected those two narcotics on account of their action on the cortex of the brain. He concludes from his experiments that 1. Pure "vasopressin" dissolved in physiologic solution of sodium chloride and administered suboccipitally in doses of 10 units causes a high blood pressure. 2. Preparations of hormones of the anterior hypophysis, and especially of the corticotropic and adrenotropic hormones introduced suboccipitally in the same amounts, do not influence the blood pressure. 3. All hypotonic solutions given suboccipitally cause a temporary decrease of the blood pressure, not always followed by increase of blood pressure. Diluted hypotonic solutions and distilled water cause a sudden, deep drop of the blood pressure, accompanied by arrest of the heart action for a few seconds and followed by weak pulse caused by irritation of the center of the vagus nerve in the medulla oblongata. 4. Slightly hypertonic solutions do not cause any action on the blood pressure but act as an irritant on the respiratory center. More saturated solutions act similarly to distilled water. 5. All solutions administered to human beings for diagnostic or therapeutic purposes must be strictly isotonic in order to avoid the complications caused by hypotonic solutions. 6. Through suboccipital or lumbar injections it is possible to exert a direct action on the vasomotor, the vagus nerve and the respiratory centers, which can have a practical value in cases of shock to these centers, as for example in cases of accident by lightning or electric current.

Acta Medica Scandinavica, Stockholm

93 1236 (Sept. 7) 1937 Partial Index

What Is Meant by Rheumatic Pancarditis—D. D. Pletnew—p. 1
Nycturia—F. Mainzer—p. 15
Special Form of Generalized Lipogranulomatosis—L. Koster and E. Behr—p. 30
Organic Acidosis in Hypochloremic Azotemia After Pylorus Obstruction—P. Gomori and P. Marovitzky—p. 42
*Investigations on Treatment of Thyrotoxicosis—L. Meyler—p. 48
*Treatment of Dystrophia Adiposo-genitalis with Gonadotropic Hormone from the Urine of Pregnant Women—P. Plum—p. 6
X-ray Information Supplied by Splenic Puncture in Diseases of Spleen and Blood—P. Enlie Weil, P. I. Ch. Wall and S. Perle—p. 84

Treatment of Thyrotoxicosis—Meyler discusses three points. 1. The unfavorable effects of intercurrent infections in thyrotoxicosis. He observed five fatalities from mild angina in patients with thyrotoxicosis and cites the case of a woman who died of a mild exanthema after she had been prepared for a goiter operation. He also describes animal experiments which

prove the lowered resistance to intercurrent infections during thyrotoxicosis. 2. The hepatic function in thyrotoxicosis. The hepatic function is impaired in most patients with exophthalmic goiter. This is demonstrated by the urobilinuria and the reduced galactose tolerance of these patients. The treatment should aim at an improvement in the hepatic function by providing a diet that is rich in carbohydrates and vitamins and by administering insulin. However, there is no advantage in an abundant diet. 3. The value of a hunger diet in thyrotoxicosis. He points out that a hunger diet has been shown to depress thyroid function in normal people. This treatment was therefore tried in sixteen cases of exophthalmic goiter. Excellent results were obtained with diets of from 800 to 1,000 calories a day containing only 20 Gm of protein. The effect was permanent in only three of the cases. In the other cases an increase in the diet was followed by a new rise of the basal metabolism. Nitrogen balances and creatine excretion were studied during the dietary treatment. The author finally discusses the physiologic basis of this type of therapy.

Treatment of Adiposogenital Dystrophy—Plum reports his experiences with the intramuscular injection of a gonadotropic hormone preparation in five cases of adiposogenital dystrophy, in two cases of cryptorchidism and in one case of adiposity. The preparation that he employed was extracted from pregnancy urine, it is said to be free from the estrogenic principle and it is standardized on the basis of its luteinizing effect on mice. In adiposogenital dystrophy the treatment with gonadotropic substance alone produced in from six to eight weeks a marked growth of the genitalia but no change in the metabolism or in the distribution of fat. By combining this treatment with thyroid therapy, a marked loss in weight was obtained. In one patient with cryptorchidism but without signs of endocrine disturbances the treatment was followed by a marked growth of the genitalia, but the testicles did not descend in the course of two months' treatment. In another patient with cryptorchidism, combined with adiposity and decreased metabolism, descent of the testicles was obtained in two weeks. In a few instances the treatment caused a little tenderness at the site of injection, otherwise there were no untoward effects of any kind.

Hospitalstidende, Copenhagen

SO 1017 1044 (Sept. 14) 1937

Spondylitis Deformans—J. Kraft—p. 1017
*Investigations on Changes in Blood Picture and Sedimentation Reaction Following Pneumothorax—P. Mourier—p. 1031
Familial Occurrence of Hepatolenticular Degeneration (Wilson's Disease)—Emma Vestegaard—p. 1039

Blood Picture and Sedimentation Reaction After Pneumothorax—Mourier tabulates the results of thirty-three examinations in twenty-eight patients, made partly before insufflation, partly one-quarter hour, one, two and three hours after insufflation. Even a quarter hour after insufflation he found changes in the percental composition of the blood, consisting of (1) from 3 to 14 per cent increase in neutrophil elements in most cases, in some about 25 per cent increase, (2) from 4 to 15 per cent decrease in the lymphocyte count, in some cases up to about 20 per cent decrease, (3) 8 or 9 per cent increase in the monocyte count after a transient fall of 3 or 4 per cent and (4) in some cases a 2 or 3 per cent further shifting to the left in the Arnetti picture. The absolute leukocyte count per cubic centimeter showed an increase of up to 14,000, in most cases varying from 4,000 to 8,000. The sedimentation reaction was usually unchanged, the reduced sedimentation after insufflation mentioned by Lotze and Pongor was not seen. The author says that the changes are about the same, whether the insufflation is unilateral or bilateral, they are apparently independent of the degree of completeness of the pneumothorax and in most cases are independent of whether the final pleural pressure is positive or negative. The results agree with Mazzetti, Geronimo and Gestaldi's "hemoclastic curve," except that no decrease was established in the absolute leukocyte count but on the contrary, an increase. The reaction must depend on a reaction of the collapsed lung, whether it is due to spread of smaller amounts of tuberculin (Mazzetti, Geronimo and Gestaldi) or to a change in the pulmonary circulation is not known.

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PRESENT CONCEPTS OF ACUTE CORONARY OCCLUSION

CLINICAL LECTURE AT ATLANTIC CITY SESSION

CHARLES C WOLFERTH, M.D.

PHILADELPHIA

The terms coronary occlusion, coronary thrombosis and cardiac or myocardial infarction are often employed as synonyms, although there are useful differences in their meanings. Coronary thrombosis refers to a special type of coronary occlusion in which thrombosis is the final event in the process of occlusion. Myocardial infarction, although a frequent result of acute coronary occlusion, does not always follow it.

FREQUENCY

One of the much discussed questions of the day is whether coronary disease is becoming more frequent than it was in former years or whether it merely seems to be more frequent because some progress has been made in its recognition. All present day statistical studies reveal its importance as a cause of death. Most writers on the subject assume that its incidence is rapidly increasing. The further assumption is usually made that the increase is due to stress and strain of modern life. On the other hand, Cohn and Lingg¹ concluded from their statistical study that, if account is taken of changes in fashions in diagnosis, there has been a relatively small increase in the death rate from circulatory disease during the past thirty years and that recently the increase has been "ever slighter." Even the small increase seems to depend largely on the fall in the rate for infectious diseases in the very decades in which a rise for the circulatory group took place. They stated that belief in the theory that stress and strain of life account for increase in the death rate from cardiac diseases is unnecessary.

There appears to be considerable doubt as to the accuracy of statistics that are being collected even at the present time. Hedley² concluded from his study of hospital statistics that "it is not possible to obtain an accurate conception of the total number of deaths from heart disease or of any of the various etiologic types."

So far as any attempt to compare the present and the past incidence of acute coronary occlusion is concerned, physicians are almost entirely in the dark. Few persons in preceding generations even knew there was such

a malady. Parkinson³ said "Isolated records show that a physician here and there knew that a coronary thrombosis might cause a prolonged attack of angina even with recovery." It is known, however, that coronary occlusion must have been not uncommon in Germany over fifty years ago, otherwise Leyden⁴ would not have been able to recognize so many cases and write such an excellent description of its clinical features.

ETIOLOGY

In the vast majority of cases acute coronary occlusion develops at the site of an arteriosclerotic lesion. Its etiology is therefore intimately related with that of coronary arteriosclerosis and arteriosclerosis in general. As yet but little is known about the fundamental factors concerned in the production of arteriosclerosis and there would be little profit in attempting to review current hypotheses here. Nevertheless, various facts have been learned regarding certain characteristics and relationships of coronary arteriosclerosis and acute coronary occlusion that have some bearing on the etiology of these conditions.

It has been noted that there is little evidence to support the view that increase in the stresses and strains of life is a significant factor in the present incidence of coronary disease. On the other hand, this cannot be interpreted as meaning that physical or mental strains and overwork may not be important factors in the production of this disease and also of acute coronary occlusion. Age, sex and race are all known to have an important bearing. Coronary occlusion is relatively uncommon before the fifth decade. The greatest number of cases occurs in the sixth decade, although the actual percentage incidence may be higher in later decades. It is far more common in men than in women. The recent studies of Hedley⁵ and Johnston⁶ show that its frequency is much greater in the white than in the Negro race. Type of weather may be a factor in precipitating acute coronary occlusion, since the data collected by Wood and Hedley⁷ and Mullins⁸ appear to show that in Pennsylvania acute coronary occlusion is far more common in the winter months. Coronary arteriosclerosis is observed at necropsy in the majority of persons who had been either hypertensive or diabetic. The incidence of acute coronary occlusion is high for both of these diseases.

3 Parkinson John. Coronary Thrombosis and Its Relation to Angina Pectoris. Brit M J 2 549 (Sept 17) 1932.

4 Leyden Ernst. Ueber die Sclerose der Coronar Arterien und die davon abhängigen Krankheitszustände. Ztschr f klin Med 7 459 and 539 1883 1884.

5 Hedley O F. A Study of 450 Fatal Cases of Heart Disease Occurring in Washington (D C) Hospitals During 1932 with Special Reference to Etiology Race and Sex. Pub Health Rep 50 1127 (Aug 23) 1933.

6 Johnston Christopher. Racial Differences in the Incidence of Coronary Sclerosis. Am Heart J 12 162 (Aug) 1936.

7 Wood F C and Hedley O F. The Seasonal Incidence of Acute Coronary Occlusion in Philadelphia. M Clin North America 19 151 (July) 1935.

8 Mullins W I. Age Incidence and Mortality in Coronary Occlusion. Pennsylvania M J 39 322 (Feb) 1936.

From the Edward B. Robinette Foundation Medical Clinic, Hospital of the University of Pennsylvania.

Read in the Medical Division of the General Scientific Meetings at the Eighty-Eighth Annual Session of the American Medical Association, Atlantic City, N. J., June 8, 1937.

1 Cohn A. E. and Lingg Claire. Heart Disease from the Point of View of the Public Health. Am Heart J 9 283 (Feb) 1934.

2 Hedley O F. A Critical Analysis of Heart Disease Mortality. J A M A 105 1405 (Nov 2) 1935.

There is considerable difference of opinion as to whether excessive use of tobacco favors the production of coronary occlusion. In this connection the observation of White⁹ that all his twenty-one patients who had coronary thrombosis before the age of 40 used considerable amounts of tobacco merits attention. There is no doubt whatever that ceasing the use of tobacco lessens the incidence of pain in certain patients with coronary disease, but in a large number no beneficial effect is observed.

The opinion is widespread that coronary disease selects as its special victims professional men and executives who are subject to heavy strain and responsibility. Analysis of the causes of death among American physicians in 1936 shows clearly the terrific effects of this disease and its complications in members of the medical profession.¹⁰ Similar careful analyses of other occupational groups for purposes of comparison are needed in the effort to obtain data bearing on certain possible etiologic factors concerning which there is no clearcut evidence at present. In addition, studies regarding the influence of heredity are needed.

The two other causes of coronary occlusion besides coronary arteriosclerosis and its sequelae which deserve mention are syphilitic disease of the coronary arteries and embolism. Coronary occlusion due to syphilis is not common unless aortic insufficiency is present.¹¹ Embolism is a comparatively rare cause of coronary obstruction. Saphir¹² reported three cases and was able to find only eleven other acceptable cases in the literature. Levy, Bruenn and Kurtz¹³ observed six cases in 2,877 necropsies.

PATHOGENESIS

The occurrence of myocardial infarction following coronary occlusion apparently depends on whether or not adequate collateral circulation is available for the area deprived of its customary blood supply. There have been considerable differences of opinion as to whether coronary arteries are end arteries or whether there is free anastomosis. Experimental work since the time of Cohnheim¹⁴ has indicated that collateral flow is extremely small and insufficient to support contraction in an area rendered ischemic by ligation of a main branch. It has been demonstrated by electrocardiography that myocardial injury currents develop within one or two minutes after even a small coronary vessel is obstructed,¹⁵ and recently Tennant and Wiggers¹⁶ showed that after coronary obstruction, contraction in the ischemic area stops within one minute. According to Wiggers,¹⁷ however, the experimental results do not preclude enlargement of minute potential communications or development of new ones when a main branch

is slowly occluded. Under such circumstances, altered pressure gradients distend "normally useless channels" and so furnish a supply of blood under pressure for newly growing vessels. Some such explanation must account for the frequent finding of coronary occlusion without myocardial infarction and particularly for such cases as the two reported by Leary and Wearn,¹⁸ in which complete occlusion of both coronary orifices had occurred without any signs of myocardial infarction.

Suggestions have been made that a new blood supply may be derived from thebesian vessels, from the vasa vasorum about the root of the aorta, from pericardial vessels or from reversal of flow in the venous system. However, it seems probable that the usual source of collateral circulation after myocardial infarction is the coronary circulation itself. That anastomoses are present has been shown by Gross and Kugel,¹⁹ even though all available evidence indicates that in normal hearts the collateral flow is extremely small. The assumption that collateral circulation develops only when it is required may explain the interesting observation by Beck and Tichy²⁰ that new blood vessels can be made to grow into the myocardium only when there is need for more circulation.

The experimental evidence suggests that the most dangerous type of clinical coronary occlusion should be sudden obstruction in an otherwise intact coronary circulation. Coronary embolism offers the chance of studying in the human being the effect of sudden obstruction in a previously healthy coronary system. Saphir¹² stated that sudden death is the striking feature of this condition. Of the fourteen patients he studied, twelve died suddenly. In striking contrast is the result of syphilitic occlusion of a coronary orifice, which is usually gradual in its development. Bruenn¹¹ stated that infarction is relatively rare in cases of syphilitic coronary occlusion. One may postulate, therefore, that among the important variables in human coronary occlusion, in addition to size and location of vessels obstructed, are the following factors:

1 The rapidity of development of occlusion. If occlusion occurs suddenly, more disastrous effects may be looked for than if it had occurred gradually, because of lack of time for the development of functionally useful collateral channels. However, in the majority of cases in which the clinical picture of acute coronary occlusion occurs, it seems probable that the final acute occlusive process (usually thrombosis) takes place in a vessel whose lumen has already been considerably reduced. The relative contribution of thrombosis to this process of occlusion may be the deciding factor in the severity of the attack.

2 The integrity of the circulation adjacent to the area supplied by the occluded vessel. Sprague and Organ²¹ stated that coronary thrombosis with closure limited to a single artery or branch of an artery is relatively rarely observed at necropsy. Saphir, Priest, Hamburger and Katz²² stated that in their cases whenever an infarct was found at least two branches were

9 White P D. Coronary Disease and Coronary Thrombosis in Youth. J. N. Soc. New Jersey 32: 596 (Oct.) 1935.

10 Obituaries of Physicians Published in 1936. editorial J. A. M. A. 105: 1542 (May 1) 1937.

11 Bruenn H G. Syphilitic Disease of the Coronary Arteries. Am. Heart J. 9: 421 (April) 1934.

12 Saphir Otto. Coronary Embolism. Am. Heart J. 5: 312 (Feb.) 1933.

13 Levy R L, Bruenn H G and Kurtz Dorothy. Facts on Disease of the Coronary Arteries Based on a Survey of the Clinical and Pathological Records of 762 Cases. Am. J. M. Sc. 187: 376 (March) 1934.

14 Cohnheim J and Schulthess Rechberg A V. Ueber die Folgen der Kranzarterienverschliessung fuer das Herz. Virchows Arch. f. path. Anat. 55: 30 1881.

15 Wood F C and Wolferth C C. Experimental Coronary Occlusion. Inadequacy of the Three Conventional Leads in Recording Characteristic Action Current Changes in Certain Sections of the Myocardium. An Electrocardiographic Study. Arch. Int. Med. 51: 771 (May) 1933.

16 Tennant Robert and Wiggers C J. The Effect of Coronary Occlusion on Myocardial Contraction. Am. J. Physiol. 112: 301 (June) 1934.

17 Wigger C J. The Inadequacy of the Normal Collateral Coronary Circulation and the Dynamic Factors Concerned in Its Development During Slow Coronary Occlusion. Am. Heart J. 11: 6-1 (June) 1936.

18 Leary Timothy, and Wearn J T. Two Cases of Complete Occlusion of Both Coronary Orifices. Am. Heart J. 5: 412 (April) 1930.

19 Gross Louis and Kugel M A. The Arterial Blood Vascular Distribution to the Left and Right Ventricles of the Human Heart. Am. Heart J. 9: 165 (Dec.) 1933.

20 Beck C S and Tichy V L. The Production of a Collateral Circulation to the Heart. Am. Heart J. 10: 849 (Oct.) 1935.

21 Sprague H B and Organ E S. Electrocardiographic Study of Cases of Coronary Occlusion Proved at Autopsy at the Massachusetts General Hospital 1914-1934. New England J. Med. 212: 903 (May 16) 1935.

22 Saphir Otto, Priest W S, Hamburger W W and Katz L. Coronary Arterial Disease. Coronary Thrombosis and the Resulting Myocardial Changes. Am. Heart J. 10: 67 (June) 762 (Aug.) 1935.

involved. On the other hand, Moritz and Beck²³ found in their series of ninety-four cases that only the left coronary artery was occluded in 54 per cent, only the right in 13 per cent and both the left and the right in 33 per cent.

CLINICAL FEATURES

Smith, Rathe and Paul²⁴ have emphasized the intimate relationship between angina of effort, severe anginal pain (coronary occlusion) and paroxysmal dyspnea. They found that any one of these three conditions might be the first manifestation of coronary disease. Shortness of breath was the most common initial symptom and frequently persisted for months or years before other evidences of impaired cardiac function made their appearance. In approximately 50 per cent of the cases in which the initial manifestation was coronary occlusion, angina of effort later developed. The relation between coronary occlusion and paroxysmal dyspnea was found to be equally close.

There is a latent or symptomless period in coronary arteriosclerosis which may last a long time. During this period, physical examination may reveal nothing significant, although impairment of exercise tolerance may sometimes be discovered. Moreover, the electrocardiogram may or may not show significant changes. Many persons in this period are able to pass life insurance examinations without difficulty. The electrocardiogram may be abnormal, however, for years before clinical manifestations appear. Some patients complain of easy fatigability, gastro-intestinal disturbances and nervous irritability or insomnia long before the first definite evidence of cardiac disorder. The latter may take any of the following forms: (1) shortness of breath on effort, (2) angina pectoris, (3) acute coronary occlusion, either coming like a bolt from the blue or preceded by one or more so-called pilot attacks of anginal pain, less commonly (4) disturbances of cardiac mechanism such as auricular fibrillation or heart block and (5) paroxysmal dyspnea or trepopnea.²⁵

The various clinical phenomena of coronary disease may be conveniently classed in four categories: (1) abnormalities of cardiac mechanism, (2) angina pectoris, (3) acute coronary occlusion and (4) heart failure, including paroxysmal dyspnea. In any case these may be present singly or in various combinations. All may be present at the same time. Occlusion of coronary vessels and heart failure are the end results of progressive coronary disease. Acute coronary occlusion, however, with myocardial infarction should probably be looked on as an accident in the course of the disease. It is this condition, talked about so much by physicians and now feared by laymen, which makes the course of coronary disease so unpredictable.

SYMPTOMS

The outstanding symptom of onset is pain or severe distress. Most characteristic is the constricting or so-called viselike substernal pain. However, the distress may be described as a burning, boring, aching or choking sensation or a feeling as though something inside were being distended to the bursting point. Although these various types of distress are characteristically severe, sometimes they are mild. The various

locations of pain are well known, but left subscapular pain has not been sufficiently emphasized in the literature. Articles are to be found stressing the frequency of occurrence of coronary occlusion and myocardial infarction without pain.²⁶ The occurrence may depend to some extent at least on the rapidity of development of lesions. The tabulation of the anginal type of pain from histories, however, does not yield reliable data. If pain is mild or occurred some time in the past, patients frequently fail to volunteer a statement about it and, as a matter of fact, often seem to forget it. Furthermore, they will frequently deny having had pain, but on questioning will admit having suffered one of the other types of distress mentioned.

The anginal type of pain or distress probably occurs in nearly every case of acute myocardial infarction. Jervell²⁷ in his monograph stated that he found electrocardiographic evidence of acute myocardial infarction in but one patient who suffered no pain. I have seen only two or three patients with definite electrocardiographic evidence of recent infarction from whom a history of pain or other anginal type of distress could not be elicited.

On the other hand, the occurrence of prolonged and severe attacks of pain without subsequent clinical or electrocardiographic evidence of myocardial infarction is far from rare. In a number of cases reported of death following prolonged anginal attacks, necropsy failed to reveal evidence of important coronary disease or any other cause of death. Leary²⁸ has recently reported cases in which death was attributed to coronary spasm.

The characteristic signs often attributed to coronary occlusion—fall in blood pressure, narrowing of the pulse pressure, congestive failure (of which pulmonary congestion is the outstanding feature), fever, leukocytosis, friction rub, faint heart sounds, gallop rhythm, abnormalities of cardiac mechanism, increased sedimentation rate of red cells and electrocardiographic changes—are due to myocardial infarction rather than to coronary occlusion per se. The enfeeblement of cardiac action and the characteristic drop in blood pressure and narrowing of pulse pressure are probably due in part to the fact that, the infarcted area being no longer able to contract, the remainder of the heart muscle is unable to carry on efficiently. Tennant and Wiggers¹⁰ stated that the tendency to development of hypodynamic ventricular beats following coronary occlusion can be explained by loss of pressure due to systolic stretching of the areas in which contraction is enfeebled or absent. Thus, infarction not only lessens cardiac efficiency by putting out of commission part of the muscle but actually diminishes the efficiency of the surviving muscle through the dissipation of intraventricular pressure by the stretching of the injured area. This mechanism probably accounts in part also for the behavior of the blood pressure.

Fever, leukocytosis and increased sedimentation rate of erythrocytes are of no value in the differentiation of myocardial infarction from other lesions which may also produce these responses but may be of considerable help in the decision as to whether or not infarction has actually taken place after an attack of pain. Change in sedimentation rate is according to my experience the

23 Moritz, A. R. and Beck, C. S. The Production of a Collateral Circulation to the Heart. *Am Heart J* 10: 874 (Oct.) 1935.

24 Smith, F. M., Rathe, H. W. and Paul, W. D. Observations on the Clinical Course of Coronary Artery Disease. *J A M A* 105: 2 (July 6) 1935.

25 Wood, F. C., and Wolferth, C. C. The Tolerance of Certain Cardiac Patients for Various Recumbent Positions (Trepopnea). *Am J M Sc* 103: 354 (March) 1937.

26 East, C. F. T., Bain, C. W. C., and Cary, F. L. Cardiac Infarction Without Pain. *Lancet* 2: 60 (July 14) 1928. Saphir, Priest, Hamburger and Katz.

27 Jervell, Anton. Elektrokardiographische Befunde bei Herzinfarkt. *Acta med. Scandinav. supp.* 68: 1267 (Jan.) 1935.

28 Leary, Timothy. Coronary Spasm as a Possible Factor in Producing Sudden Death. *Am Heart J* 10: 338 (Feb.) 1935.

most sensitive indicator of the three. The rate may become accelerated when fever is absent, the leukocyte count normal and the electrocardiographic appearance uncertain. Furthermore, it often remains abnormal for a considerable time after the electrocardiogram no longer shows evidences of acute injury or significant changes in successive serial tracings.

Friction sounds probably are not elicited in more than 25 per cent of cases. They are often evanescent, lasting only a few hours, occasionally they persist for a number of days. Since pericardial involvement may extend a considerable distance beyond the area of infarction, a friction sound need not necessarily originate directly over the myocardial lesion.

Tachycardia occurs in the majority of cases but is occasionally absent, particularly in cases of posterior infarction. Paroxysms of auricular fibrillation occur most frequently when the infarction is in the area of the anterior descending branch. Heart block tends to be associated with posterior infarction. Extrasystoles occur with infarction in any location.

ELECTROCARDIOGRAPHIC DIAGNOSIS

Prior to the addition of chest leads to electrocardiographic technic, it had been found that, while serial electrocardiograms often revealed the presence of acute myocardial injury, single tracings frequently failed to do so. In experimental coronary occlusion, significant changes often failed to make their appearance in the tracings although myocardial anoxemia was obvious. In an attempt to investigate this problem,²² it was found that in dogs injury currents could be recorded after obstruction of even a small coronary vessel, provided an electrode was placed on the area of its distribution. This indicated that the changes were present but that the limb leads did not always reflect them. It then occurred to experimenters to try chest leads. These had often been used in the past for other purposes, notably by Waller²⁹ and Lewis.³⁰ After Lewis's work it had been the practice for many years to use chest leads with one electrode over the auricular area whenever limb leads did not satisfactorily record auricular activity. When chest leads were applied to the study of acute coronary occlusion, first in experimental animals and then in patients, it was discovered that certain lesions which produced only equivocal changes or none at all in the limb leads showed spectacular injury currents in the chest leads.³¹ During the next few years much was learned as a result of the contributions of many investigators, notably F. N. Wilson, regarding the value and limitations of chest leads as a supplement to the conventional limb leads in the study of myocardial infarction, and various diagnostic patterns have been established.³²

Despite the advances in electrocardiography, this method should under no circumstances replace careful history taking and physical examination. An electrocardiogram is, however, such a valuable check on clinical examination in helping to establish or rule out the diagnosis that it should be used in every case in which coronary occlusion is suspected.

In certain recent studies of pathologic material, such as those of Sprague and Organ³³ and Saphir, Priest, Hamburger and Katz,³⁴ it would appear that electrocardiography had not made a good showing. Barnes³⁵ however stated that, when changes characteristic of acute myocardial infarction fail to develop, it will usually be found that tracings were not obtained in sufficient numbers or at the proper time in relation to acute occlusion, that multiple acute infarctions of the left ventricle were present, that bundle branch block obscured the changes, that pericarditis or pericardial effusion modified the electrocardiographic changes or that the tracing was made at about the time of death. The observations of Barnes were based on the use of limb leads alone. If chest leads are also used, one may modify the statements of Barnes in the following way. Serial tracings are not so often necessary, multiple acute infarctions³⁴ rarely obscure the diagnosis and the changes produced by pericarditis (more correctly speaking, by the myocarditis associated with pericarditis) can usually be differentiated from those produced by myocardial infarction.³⁵

During the past five years, since my co-workers and I have used chest leads as a supplement to limb leads, not a single patient of the thirty-two who have come to necropsy with an electrocardiographic diagnosis of acute myocardial infarction has failed to show such a lesion. Moreover, no patient studied post mortem thus far has shown acute infarction which electrocardiograms had failed to disclose. There has been one equivocal case—a case of dissecting aneurysm in which blood had infiltrated the right ventricle and caused acute destruction of muscle tissue. Nevertheless it is probable that certain small acute infarctions cannot be detected by electrocardiography, although none of these have been observed at our necropsies.

In the diagnosis of healed infarction, electrocardiography is not nearly so sensitive a method. The changes produced by infarction on the lateral or posterolateral wall of the left ventricle often disappear fairly rapidly so that they can no longer be recognized. The electrocardiographic pattern in the healed stage of posterior infarction is scarcely pathognomonic, although it may be regarded as reliable evidence of damage to this area of the heart. The pattern of the healed stage of anterior or apical infarction, however, tends to persist for a long time, at least in part, particularly in the chest leads, so that unmistakable evidence of the lesion may still be present many years after the attack.

DIFFERENTIAL DIAGNOSIS

Almost any condition capable of producing acute pain or distress in the same area as coronary occlusion may at one time or another present a problem in differential diagnosis. The list of conditions is greatly lengthened by the fact that the pain of coronary occlusion is often comparatively mild and the subsequent manifestations so slight as to escape attention. Thus, acute perforation of a gastric ulcer, gallbladder colic, acute pancreatitis, acute pericarditis or other acute mediastinal inflammatory condition, dissecting aneurysm of the aorta, pulmonary embolus, pleurisy or beginning pneumonia must be considered. Arthritis of the spine

29 Waller A. D. A Demonstration on Man of the Electromotive Changes Accompanying the Heart's Beat. *J. Physiol.* 229: 1887.

30 Lewis Thomas. *The Mechanism and Graphic Registration of the Heart Beat*. ed. 3. London: Shaw & Sons Ltd., 1923, pp. 293-343.

31 Wolfert C. C. and Wood F. C. The Electrocardiographic Diagnosis of Coronary Occlusion by the Use of Chest Leads. *Am. J. M. Sc.* 153: 30 (Jan.) 1932. Further Observations upon the Use of Chest Leads in the Electrocardiographic Study of Coronary Occlusion. *Am. Clin. North America* 16: 161 (July) 1932.

32 Wolfert C. C. and Wood F. C. The Electrocardiographic Diagnosis of Myocardial Infarction. *Modern Concepts of Cardiovascular Disease*, ed. 1. No. 6. June 1935.

33 Barnes A. R. The Electrocardiogram in Myocardial Infarction. *Arch. Int. Med.* 55: 457 (March) 1935.

34 Wolfert C. C. and Wood F. C. Acute Cardiac Infarction Involving Anterior and Posterior Surfaces of the Left Ventricle. *Arch. Int. Med.* 56: 77 (July) 1935.

35 Bellet Samuel and McMillan T. M. Electrocardiographic Patterns in Limb and Precordial Leads in Acute Pericarditis. A Study of 50 Cases read before the Section on General Medicine, College of Physicians of Philadelphia, March 29, 1937, to be published.

or shoulder, spasm in the gastro-intestinal tract (esophagus, pylorus or colon), lesions of the diaphragm such as eventration, neuritis or functional neuroses may all lead to mistakes in diagnosis. Perhaps the most difficult of all is the differentiation between a prolonged attack of angina pectoris and acute coronary occlusion. There is an important border zone between these two conditions into which many cases fall. In some, serial electrocardiograms with chest leads and erythrocyte sedimentation tests show changes indicating that at least a slight myocardial lesion has occurred.

The electrocardiographic picture of acute coronary occlusion is simulated to some extent by a variety of conditions³⁶ which need not be mentioned here. However, most of the conditions which cause difficulty in the clinical differential diagnosis do not produce significant alterations in the electrocardiogram. Thus, combined clinical and electrocardiographic study with chest leads greatly simplifies the differential diagnosis.

SUBSEQUENT COURSE AND PROGNOSIS

Probably the great majority of early sudden deaths are due to ventricular fibrillation. Other causes of sudden death are embolism and ventricular rupture, although these conditions are less common causes and rarely occur until myocardial infarction is at least a few days old.

Among persons who escape sudden death in the early stage of acute coronary occlusion the commonest cause of death is myocardial insufficiency. The mechanism of heart failure, particularly in the first week, may consist of loss of ability to drive the blood forward through the systemic circulation. The patient may exhibit little or no dyspnea and no marked pulmonary edema, but the pulse literally fades out, in some cases the rate is rapid, but in others it is not increased. Possibly the loss of intraventricular pressure due to stretching of the infarcted area is partly responsible for this behavior.

Recurrent attacks of pain are common during the acute stage of myocardial infarction, and serial electrocardiograms may show that some of these attacks are accompanied by an extension of the area of infarction. Such recurrence may change what seemed to be a favorable course to an unfavorable one.

Hochrein and Schneyer³⁷ observed a mortality rate of 71 per cent in 226 cases, whereas Master, Jaffe and Dack³⁸ reported a mortality rate for the first attack of 8 per cent and a mortality rate for all attacks of 16.5 per cent. The figures of other observers range between these two extremes. It is generally agreed that the mortality rate is influenced by (1) age of the patient (the rate being lower for relatively young people than for the older age groups), (2) number of attacks (mortality is much less for the first than for subsequent attacks), (3) severity of clinical manifestations (higher mortality for severely ill patients) and (4) electrocardiographic appearances (according to Conner and Holt³⁹ the patients who show minimal electrocardiographic abnormalities have a more favorable outlook than those with marked electrocardiographic changes). According to our experience, patients with evidences of

posterior infarction have a better prognosis than those with anterior infarction.⁴⁰ Hospital statistics may fail to present the complete picture of the disease because (1) some patients die before they can be moved to a hospital, (2) others are too sick to be moved and (3) still others do not regard themselves as sick enough to go. Furthermore, clinical sensitization to the diagnosis, combined with careful electrocardiographic study, will uncover many mild cases in office practice that would otherwise be overlooked.

The course of the patients who survive an acute attack of coronary occlusion is on the whole unfavorable, although every one of experience has a few patients who have done remarkably well. One of the great hazards is the danger of subsequent attacks. Conner and Holt's figures,³⁹ which indicate that at least 40 per cent of the persons who survived their first attack suffered subsequent attacks, are admittedly inadequate because some patients had died prior to the follow-up study and others could not be traced.

The inevitable result of coronary occlusion is permanent impairment of cardiac function. Many patients never recover sufficiently to return to work after the first attack. Each subsequent attack survived causes further crippling. Conner and Holt found that at the end of five years only 15 per cent of their patients could be regarded as well and at the end of ten years only 3.4 per cent. The results reported by Willius⁴¹ seem a little better, but he was dealing with a selected group.

TREATMENT

In the early stages of the attack the two conditions that may urgently require treatment are intolerable pain and circulatory collapse. For the pain, nitrites are usually useless and may be dangerous. Hypodermic injections of morphine or other opiates are required. Although morphine is not to be spared so long as pain is severe, overdosing may increase the hazard by depressing respiration. The relief of flatulence, the application of heat or counterirritation to the chest and the administration of oxygen are measures sometimes helpful in relieving pain.

In the treatment of circulatory collapse many physicians inject such drugs as caffeine, atropine, digitalis or one of the various proprietary preparations highly recommended by their manufacturers. None of these drugs have more than dubious value, most are useless. Epinephrine may be dangerous. The patient should be kept warm by such measures as the use of hot water bags and blankets. If alarming failure of the circulation occurs, an intravenous injection of from 20 to 40 cc of 50 per cent dextrose may be given slowly from time to time. Fluid and sweetened drinks given freely by mouth at this stage may start vomiting. It is best to give them in small and limited amounts. An oxygen tent may be helpful. Venesection seems to be a two edged sword, and the indications for its use are not yet clear.

Smith, Rathe and Paul⁴² advised that the administration of theophylline be instituted promptly after coronary occlusion and continued for a long time. Although there is a good theoretical indication for its use, there is considerable doubt as to how much it

36 Wolferth C. C., and Wood F. C. The Differential Diagnosis of Coronary Occlusion. Difficulties from the Electrocardiographic Standpoint. *N. Clin. North America* 18: 219 (July) 1934.

37 Hochrein Max and Schneyer Klaus. Das Schicksal des Myokardinfarktes. *Ztschr. f. Kreislaufforsch.* 28: 257 (April 15) 1936.

38 Master A. M., Jaffe H. L., and Dack Simon. The Treatment and Immediate Prognosis of Coronary Artery Thrombosis (267 Attacks). *Am. Heart J.* 12: 549 (Nov.) 1936.

39 Conner L. A. and Holt Evelyn. The Subsequent Course and Prognosis in Coronary Thrombosis. Analysis of 287 Cases. *Am. Heart J.* 5: 705 (Aug.) 1930.

40 Wood F. C., Bellet Samuel, McWilliam T. M., and Wolferth C. C. Electrocardiographic Study of Coronary Occlusion. *Arch. Int. Med.* 52: 752 (Nov.) 1933.

41 Willius F. A. Life Expectancy in Coronary Thrombosis. *J. A. M. A.* 106: 1890 (May 30) 1936.

42 Smith F. M., Rathe H. W., and Paul W. D. Theophylline in the Treatment of Disease of the Coronary Arteries. *Arch. Int. Med.* 56: 1250 (Dec.) 1935.

helps. Given intravenously, it is said to stop acute pain in some patients. The recent studies by Starr, Gamble, Margolies, Donal and Joseph⁴³ suggest that it is one of the most powerful of heart stimulants. Stimulation may be desirable in certain cases and not in others. Quinidine sulfate has been advised in the early stages in doses of 0.1 Gm. twice a day⁴⁴ up to 0.2 Gm. three times a day⁴⁵ in the hope of preventing paroxysmal ventricular tachycardia or ventricular fibrillation.

Digitalis may properly be used in the treatment of paroxysmal auricular fibrillation if it persists for many hours or appears to be adding to serious heart failure. Mild grades of congestive failure do not require digitalis. When given it should be administered much more cautiously than in the treatment of other types of congestive failure. Bellet, Johnston and Schechter⁴⁶ showed that, in dogs after the production of infarction, digitalis was less well tolerated than in normal controls. McMillan and Bellet⁴⁷ have shown that in patients with severe coronary disease, digitalis in full doses may be dangerous.

Most writers emphasize the importance of a diet small in bulk and consisting of easily digestible foods during the acute stage. As a matter of fact, many patients desire little or no food at all during this stage. Master, Jaffe and Dack⁴⁸ recommended a prolonged regimen of a low caloric diet and undernutrition, believing that it lessens the work of the heart without decreasing its efficiency and that mortality is thereby lowered.

All observers appear to agree on a minimum of from four to six weeks in bed for patients who do well and a much longer period for those who do not convalesce smoothly. The principle of rest should be continued after the patient leaves his bed. I attempt to keep even those who do best away from work for at least three months and have them begin on a part time basis with as many holidays as possible. Others should be restricted for even longer periods. There is good reason to believe that a long period of rest permits the heart to recover reserve strength much better than a short rest period and thus postpones or averts the occurrence of subsequent failure.

Little is known as to how to prevent recurrent attacks. My impression is that the patients who are willing to lead their lives on a restricted plane, avoiding severe physical and mental strains, being careful in their habits of eating, drinking and relaxation and obtaining abundant rest, do better than patients who are unwilling to submit to restraint. It has also seemed to me that those who stop entirely the use of tobacco get along better. However, whether this is due to the fact that tobacco is harmful to patients with coronary disease or to the fact that those who stop the use of tobacco are more careful in other respects would be difficult to decide.

Interesting new developments are the application of surgical procedures to the treatment of coronary disease. Total thyroidectomy has been recommended for

certain types of angina pectoris and heart failure⁴⁹. More recently, attempts have been made to improve collateral coronary circulation by surgical procedures⁴⁹. Whether either of these developments wins for itself a definite place in the treatment of coronary disease remains to be decided in the future.

SUMMARY

The concepts of acute coronary occlusion chiefly emphasized in this discussion are the following:

1 The disease is one of the major causes of death after the fourth decade. There is no evidence on which to decide whether its frequency is increasing.

2 Little is known regarding its fundamental etiologic factors. Certain definite relationships to age, sex, race, diabetes mellitus and hypertension have been discovered. The influence of heredity, habits of life, occupation, physical and mental strain, or overwork, have been much discussed but have not been clearly demonstrated.

3 The evidence at hand suggests that collateral coronary circulation is not active in normal hearts and apparently develops only when there is need for it. The course of events after coronary occlusion, particularly the occurrence of myocardial infarction, depends on such factors as the size and position of the vessel obstructed, the rapidity of development of occlusion and the integrity of the adjacent circulation.

4 Acute coronary occlusion is usually an accident in the course of coronary arteriosclerosis.

5 Progress in the technic of electrocardiography has recently been made and the diagnostic value of this procedure enhanced.

6 Combined clinical and electrocardiographic study is valuable.

7 There is a wide range in the figures obtained by various workers for mortality during attacks. Statistics show that, among patients who survive attacks, excellent recovery is the exception rather than the rule. The hazard of cardiac deterioration, subsequent attacks or both is great.

Thirty-Sixth and Spruce streets

48 Blumgart H. L., Levine S. A. and Berlin D. D. Congestive Heart Failure and Angina Pectoris. Therapeutic Effect of Thyroidectomy on Patients without Clinical or Pathologic Evidence of Thyroid Toxicity. *Arch. Int. Med.* 51: 866 (June) 1933.

49 Beck C. S. and Feil H. The Consideration of the Artificial Development of Collateral Coronary Circulation by Surgical Means. *Modern Concepts of Cardiovascular Disease* vol. 6 No. 6 June 1937.

Invention, Communication and Social Habituation—Before naming or discussing these three basic processes which characterize man, let us point out that these depend in turn upon three structural evolutionary changes which occurred either simultaneously or in very close succession, namely, the assuming of the upright position when man became a ground, rather than an arboreal, animal, the development of language vocal organ apparatus and the spurt in the growth of the great forebrain. The upright position freed the forelimbs, making possible the growth and development of manual activity; the utilization of primitive tools, in fact the sum total of all that we call *invention*; and *invention* is the first great noninherited basic process that has made civilization and culture possible. The growth of language from its primitive symbolism to its present complexity made possible *communication*, the second major basic process; and the development of these two in association and integration along with the new brain growth and intelligence brought about *social habituation* (Warden), the greatest of all biological and cultural characteristics, possessed by no lower animal except in its most rudimentary form. All that we gain by *invention* can be passed on by *communication* to be utilized by others in successive generations for social adaptation.—Lewis, Nolan D. The Position of the Occupational Therapist in a Plan of Research in Schizophrenia. *Psychiatric Quart.* 11: 539 (Oct.) 1937.

43 Starr Isaac, Gamble C. J., Margolies Alexander, Donal J. C. and Joseph N. A. Clinical Study of the Action of Commonly Used Drugs on the Heart and Circulation to be published.

44 Hochrein Max. Richtlinien für die Behandlung des Myokardinfarktes. *München med. Wchnschr.* S2: 1515 (Sept. 20) 1935.

45 Levine S. A. The Treatment of Acute Coronary Thrombosis. *J. A. M. A.* 99: 1737 (Nov. 19) 1932.

46 Bellet Samuel, Johnston C. G. and Schechter A. Effect of Cardiac Infarction on Tolerance of Dogs to Digitalis. *Experimental Study.* *Arch. Int. Med.* 54: 509 (Oct.) 1934.

47 Bellet Samuel and McMillan T. M. The Tolerance to Digitalis of Normal and Patients with Various Types of Heart Disease. *Am. Heart J.* to be published.

CORONARY DISEASE IN YOUTH

COMPARISON OF 100 PATIENTS UNDER 40
WITH 300 PERSONS PAST 80

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It has become apparent in recent years that atherosclerosis, particularly of the coronary arteries, can no longer be regarded as the natural result of old age or as a medical curiosity when it occurs in the early decades of life. It is no longer rare in practice to encounter men under 40 who have fallen victim to disease of the coronary arteries, as manifested by coronary thrombosis or uncomplicated angina pectoris or both, long before they have reached the peak of their usefulness.

It seems important, therefore, to determine how frequently serious coronary disease attacks persons in youth and early middle age and what its clinical characteristics in such persons may be. Furthermore, if clues are to be discovered that may aid in its prevention or disclose any underlying causative factors, exclusive of the aging process, the younger patients must be studied carefully.

It was with these thoughts in mind that we began our investigations nearly three years ago. During the intervening time we have been able to collect from various sources¹ material on 100 patients under 40 with coronary disease, and from a considerable number of these patients, by means of a questionnaire, we have obtained certain data regarding their manner of living. In addition we have assembled data on the mode of life of 300 persons living at ages past 80, the assumption being that persons who have attained such advanced ages constitute a highly selected group whose vital organs and functions have been much better than those of the average man. On the other hand, the younger group are marked because of the premature occurrence of serious heart disease which has until recently been regarded as the result of old age. The clinical analysis of the young group and the comparison in the manner of living of the two groups form the basis of this paper. A preliminary report was published in 1935.² So far as we have discovered, no one has as yet reported a comparison of these two groups.

LITERATURE

Among reports of cases of coronary disease published in the literature we found a considerable number on patients under 40, usually incorporated in studies covering all age groups. It has been difficult to determine from these reports just what the actual incidence of coronary diseases is in the third and fourth decades

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Because of lack of space this article is abbreviated in *THE JOURNAL*. The complete article appears in the authors' reprints.

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1 The following hospitals and individual physicians in Boston cooperated, making possible the collection of data on such a large series of young patients with coronary disease: the Peter Bent Brigham Hospital, the Boston City Hospital, the Beth Israel Hospital, and Drs. H. B. Sprague, Louis Wolff, H. B. Levine, Sylvester McGinn, R. B. King, A. G. Brailey, R. S. Palmer, Jacob Lerman, and Alfred Kraines.

2 White, P. D. Coronary Disease and Coronary Thrombosis in Youth. An Analysis of 4 Cases Under the Age of 30 Year. 21 Cases Under the Age of 40 Years and 138 Cases Under the Age of 50 Years. *J. N. Soc. New Jersey* 32: 596 (Oct.) 1935.

of life. Lack of space will not permit the lengthy review of the literature, which will appear in the reprints of this paper.

For centuries the subject of longevity has engaged the interest of medical and nonmedical observers the world over. Most of the earlier works on longevity are concerned chiefly with the tabulation of lists of aged folk, observations on their remarkable abilities, and philosophical writings. Recorded among these are such startling instances of longevity as that of Henry Jenkins, a Yorkshureman, who is said to have died in 1670 at the age of 169, having assisted, when a boy, in conveying arrows to Flodden Field at the battle which was fought 158 years previously.²⁷

More systematic and scientific observations on longevity began to appear in the latter part of the nineteenth century, of which Humphrey's²⁸ monograph on "Old Age" is a good example.

In recent years Pearl and Dublin and their associates²⁹ have made many valuable observations on the biology and diseases of senescence and the factors influencing longevity in this country.

DEFINITION OF CORONARY DISEASE

Atherosclerosis with a variable amount of fibrosis is the main problem in coronary disease in youth and middle age.²⁹ Evident infectious lesions of importance are rare and embolism is still rarer.

Disease of the coronary arteries was recognized in this study by the occurrence of coronary thrombosis, the diagnosis of which is usually easy, angina pectoris without any evidence of syphilis, valvular disease, thyrotoxicosis, severe anemia or congenital defects, and by the finding of characteristic electrocardiographic changes, which demand careful analysis, particularly in young persons. Furthermore, when the diagnosis of angina pectoris was made it was inferred that significant atheromatous changes were present in the coronary arteries and that the patient was subject to sudden death or to attacks of coronary thrombosis. A careful attempt was made to select only cases of uncomplicated coronary disease.

MATERIAL

It became evident soon after this study began that coronary disease under the age of 40 occurs so infrequently in the experience of any one clinic or individual as to make the compilation of data from such sources of limited value. Therefore, after exhausting the possibilities of our own private practice we turned to the various large hospitals in Boston and appealed to individual physicians for suitable cases. In this way 100 cases of undoubted coronary disease occurring under the age of 40 were assembled according to the diagnostic criteria listed. Cases were at once excluded when there was the slightest question as to the diagnosis or when the possibility of a complicating factor seemed to enter into the picture. Table 1 shows the ages and sex distribution in these cases.

27 Humphrey, G. M. *Old Age*. Cambridge: Macmillan and Bowes, 1889, p. 33, quotation from *Philosophical Transactions* A11, 266.

28 (a) Pearl, Raymond. *Studies on Human Longevity*. I. A Note on the Inheritance of Duration of Life in Man. *Am. J. Hyg.* 2: 229 (May) 1922. (b) II. Preliminary Account of an Investigation of Factors Influencing Longevity. *J. A. M. A.* 82: 259 (Jan. 26) 1924. (c) III. Longevity. A Pedigree. *Human Biol.* 3: 133 (Feb.) 1931. (d) IV. The Inheritance of Longevity. *ibid.* 3: 245 (May) 1931. (e) V. Constitutional Factors in Mortality at Advanced Ages (with Raenkhams, T.). *ibid.* 1: 80 (Feb.) 1932. (f) VI. The Distribution and Correlation of Variation in the Total Immediate Ancestral Longevity of Nonagenarians and Centenarians in Relation to the Inheritance Factor in Duration of Life (with Pearl, Ruth De W.). *ibid.* 6: 98 (Feb.) 1934. (g) Dublin, L. I. and Lotka, A. J. *Length of Life: A Study of the Life Table*. New York: Ronald Press Company, 1936.

29 Leary, Timothy. Experimental Atherosclerosis in the Rabbit Compared with Human (Coronary) Atherosclerosis. *Arch. Path.* 17: 453 (April) 1934.

For comparison with the young group with coronary disease, data were assembled on 300 persons living past the age of 80. These people were chosen primarily for their longevity, and such factors as race (except that they are all white), geographic or residential location and other factors which may or may not influence long life were not taken into consideration. Their names were obtained from newspaper clippings, various directories, lay and professional associates and the old folks themselves, who were glad to give us in turn the names of aged friends or relatives.

TABLE 1—Ages and Sex Distribution of 100 Patients Under 40 with Coronary Disease*

Age at Onset	Men	Women	Total
35-39	72	3	75
30-34	17	0	17
20-29	7	1	8
	96	4	100

* Average age men 35.7 women 33.2 entire series 35.6

Information was obtained from all the older group and from the majority of the survivors in the young group by means of an extensive questionnaire, too lengthy for publication here. It is fashioned for the most part after the questionnaire used by Pearl^{28†} in his studies of longevity but is more detailed, particularly regarding diet and personal habits and hygiene. Answers to the various questions yielded information from both groups about their birthplace, racial stock, place of residence, occupations, ancestral, family and marital history, use of tobacco and alcohol, exercise, nervous sensitivity and strain, dietary habits, hygiene, body build and past history of infections and operations. The results of this study are given in an analysis to follow later.

ANALYSIS OF 100 CASES OF CORONARY DISEASE OCCURRING UNDER THE AGE OF 40

The diagnosis of coronary thrombosis was established clinically in seventy-eight cases of the present series, with postmortem confirmation in ten, seventy patients had angina pectoris, forty-nine had both conditions. Twenty-nine had coronary thrombosis without angina pectoris and twenty-one angina pectoris without coronary thrombosis. One patient had neither angina pectoris nor clinically evident coronary thrombosis but showed electrocardiographic evidence of serious coronary disease.

Incidence—Fifty-two of the total of 100 patients were from our own private practice. They were observed among a total of 3,376 patients with disease of the coronary arteries. This makes an incidence of 1.54 per cent.

It must be kept in mind that this figure represents only a selected group of persons who sought medical advice because of symptoms or signs relating to the heart. The true incidence of coronary disease in the young and the old in the community can be determined only by careful examination, including electrocardiography, of thousands of persons unselected except that they include farmers, laborers, business and professional men and housewives. Such a survey should be done in various parts of the world.

Clinical Features—The clinical characteristics of coronary disease under the age of 40 differ very little from the disease as it is generally encountered. There are, however, certain striking exceptions.

Sex Incidence The most outstanding exception is the overwhelming preponderance of men over women. Ordinarily in patients with coronary disease three or four men are seen to one woman, but the preponderance of men over women in the young group is twenty-four to one. This contrast makes one think that whatever the factors are underlying the development of coronary disease they must be working with unusual force in these young men, whether they are hereditary influences, the effect of urban life, the use of tobacco or other conditions.

Hypertension The incidence of hypertension was relatively much lower in the young group than in persons of all ages with coronary disease. Hypertension was considered to be present if the systolic blood pressure measured 160 mm of mercury or more or the diastolic pressure 110 mm or more. The incidence of hypertension in our series was 16.6 per cent for ninety-six patients whose blood pressure was known, whereas in a group of all ages reported by White and Bland³⁰ the incidence was 36.4 per cent in 500 patients with angina pectoris and 25 per cent in 200 patients with coronary thrombosis. Of additional interest is the fact that three of the four women with coronary disease under the age of 40 had hypertension. Only thirteen of ninety-two men (12.5 per cent) had hypertension. This is in agreement with our own observations and those of others³¹ that coronary disease in women under the age of 50 in the absence of hypertension is uncommon. Forty-four per cent of the young group with hypertension are dead. This figure is only slightly higher than the percentage mortality for the entire group (36 per cent) at the present time but indicates that the presence of hypertension may have a slightly unfavorable influence on the duration of life.

Diabetes and Buerger's Disease Diabetes was present in only two cases of the present series and Buerger's disease in an equal number.

Size of the Heart Cardiac enlargement was present in 37 per cent of our young group. The size of the heart was questionable in 9 per cent and normal in

TABLE 2—Ages and Sex Distribution of 300 Persons Over 80*

Age	Men†	Women	Total
100 or more	12	16	28
90-99	51	37	88
80-89	127	57	184
	190	110	300

* Average age men 87.5 women 89.2 entire series 88.3

† The manner of selection no doubt accounts for the preponderance of men.

54 per cent. In the series of 500 patients with angina pectoris and 200 patients with coronary thrombosis reported by White and Bland, 63 per cent of the former and 74 per cent of the latter had cardiac enlargement. It is apparent from these figures that considerably more of the young group have hearts that are normal in size.

Electrocardiographic Observations In general the electrocardiographic appearances were much the same as for older patients with coronary disease.

Cardiac Neurosis Cardiac neurosis is frequently encountered in patients with coronary disease, par-

30 White P D and Bland E F. A Further Report on the Prognosis of Angina Pectoris and of Coronary Thrombosis. A Study of 601 Cases of the Former Condition and 200 Cases of the Latter. *Am. Heart J.* 7: 1 (Oct.) 1931.
31 Levy Hyman and Peas E P. Coronary Artery Disease. *Werner J. A. M. A.* 107: 97 (July) 1936.

ticularly those who fall victim to the disease in early life. We have called attention to this subject in two recent communications.³²

Prognosis—When we come to consider the prognosis of coronary disease in early life we find it just as difficult and as uncertain as every student of coronary disease has found it in the past. Naturally one would expect a youthful person, other things being equal, to withstand any disease process with fewer complications and for a longer time than one of advanced years. To a certain extent this is true of young persons with coronary disease.

Of the 100 patients in our series thirty-six have died and sixty-four are alive. Recent reports were obtained regarding all the patients. Of the thirty-six who died, thirty-three died of cardiac disease, eighteen very suddenly, presumably of coronary thrombosis, and two of congestive failure. Of the remaining three, two died after operations and one of pneumonia. There were only two immediate fatalities, one of the patients lived for seven hours and the other for three days. Both these deaths were due to coronary thrombosis.

additional proof were needed to validate the accuracy of the clinical diagnoses, it is furnished by the finding of gross changes in the coronary arteries of each of our ten patients examined post mortem.

Of the sixty-four patients still living, forty-two are working full time at their usual occupations. One half of this number are free from symptoms, the other half continue to have mild anginal distress. Nine patients are able to work only part time on account of angina pectoris, seven are totally incapacitated for work because of severe angina pectoris, one is unable to work because of congestive failure and five have not yet attempted normal activity since recent attacks of coronary thrombosis.

When we consider coronary disease under the age of 40 regardless of the nature of onset or clinical course (table 3), the prognosis is better by two and one-half years than in the average case of coronary thrombosis and nearly the same as in the average case of angina pectoris. For coronary disease under the age of 30 the average duration of life of those who have died and of the survivors (seven and four-tenths

TABLE 3—Longevity in Coronary Disease in Early Life and at All Ages

	Number of Cases	Percentage Mortality at Time of Last Follow Up	Average Number of Years from Onset to Death	Average Number of Years from Onset Survivors	Average for Series
Coronary disease under 40 regardless of nature of onset or clinical course	100	36	4.0 (36 cases)	5.2 (64 cases)	4.7
Coronary disease under 30	8	25	9.0 (2 cases)	6.9 (6 cases)	7.4
Coronary thrombosis					
Patients under 40 (present series)	78	30	3.6 (23 cases)	4.5 (55 cases)	4.3
Patients of all ages (White and Bland 1931)	195	52	1.5 (101 cases)	3.2 (94 cases)	2.4
Angina pectoris					
Patients under 40 (present series)*	70	34	5.2 (24 cases)	5.2 (46 cases)	5.2
Patients of all ages (White and Bland, 1931)†	450	44	4.4 (213 cases)	5.1 (233 cases)	4.9
Coronary disease under 40 further analysis‡	100				
Angina pectoris without coronary thrombosis§	21	53	5.4 (11 cases)	7.4 (10 cases)	6.4
Coronary thrombosis without angina pectoris	29	34	1.8 (10 cases)	4.5 (19 cases)	3.0
Coronary thrombosis and angina pectoris combined	49	27	5.0 (13 cases)	4.6 (35 cases)	4.7
A Angina pectoris first	36	27	5.7 (7 cases)	5.1 (19 cases)	5.3
B Coronary thrombosis first	23	26	4.3 (6 cases)	4.1 (17 cases)	4.1

* 70 per cent of this number have had coronary thrombosis.
† 25 per cent of this number have had coronary thrombosis.

‡ One patient had only electrocardiographic evidence of coronary disease.
§ 82 per cent of the deaths were sudden.

without antecedent symptoms of coronary disease. The remaining patients, both living and dead, survived for periods varying from a few months to twenty years. In contrast to the immediate mortality for coronary thrombosis of 26 per cent for our series, Conner and Holt⁴ found the immediate mortality for the first attack to be 16.2 per cent for 287 patients of all ages with coronary thrombosis. Although immediate fatality without antecedent evidence of coronary disease was rare in our young group, 50 per cent of the thirty-six deaths which occurred were sudden deaths. The same incidence of sudden death was found by Eppinger and Levine³³ for 141 patients of all ages with angina pectoris. It would appear, therefore, that young patients with coronary disease are just as susceptible to sudden death as any person with coronary disease, although they may live a little longer, as will be shown later. It is also evident from these observations that such patients almost invariably die of heart disease, either angina pectoris (sudden death), subsequent coronary occlusion or congestive heart failure. This fact alone should serve to dispel the skepticism with which the diagnosis of coronary disease in early life has been regarded by some authorities in the past. If

years) far exceeds the average period of survival in any age group regardless of the clinical manifestations.

It is also seen from table 3 that, in general, the average duration of life from onset to death and the elapsed time from the onset of symptoms in the survivors is greater for our young group with coronary thrombosis and angina pectoris than for similar groups of all ages reported by White and Bland. The accumulation of material for our young series has taken place over a longer period, and much of it has come under observation since the publication of White and Bland's figures. The two series are therefore not strictly comparable as to time relationships. Nevertheless, we find the comparisons of percentage mortality and duration of survival for the living and the dead in the two series useful and of interest.

For the young group with coronary thrombosis who have died the period of survival from onset to death (3.6 years) is nearly two and one-half times as great as for the group of all ages (1.5 years), a better figure, to be sure, but still not very encouraging. The average duration from the onset of symptoms for the survivors (4.5 years) is also greater for the young group by more than a year than for the group of all ages (3.2 years). This gives an average duration of life of 4.3 years for the entire but uncompleted series of 100 young people with coronary disease as contrasted with an average of 2.4 years for 195 patients

³² Glendy, R. E. and White, P. D. The Recognition and Treatment of Cardiac Neurosis. *M. Clin. North America* 21: 449 (March) 1937. The Growing Importance of Cardiac Neurosis. *Ann. Int. Med.* 10: 1624 (May) 1937.

³³ Eppinger, E. C. and Levine, S. A. Angina Pectoris. Some Clinical Considerations with Special Reference to Prognosis. *Arch. Int. Med.* 53: 120 (Jan.) 1934.

of all ages. This does not mean, however, that it is any advantage to have coronary disease in youth.

In comparing angina pectoris in early life with the condition at all ages, one finds that the prognosis as expressed in years is only slightly better for the younger patients. For those who have died the average duration of life from onset to death was 52 years, as compared with 44 years for persons of all ages. The average duration from the onset of symptoms for the survivors was 52 years for the younger group and 51 years for the group of all ages. The averages for both series were 52 years and 49 years, respectively. The reason that the younger patients with angina did not live any longer than the average for the group of all ages is that so many of the former (70 per cent) had attacks of coronary thrombosis whereas only 25 per cent of the latter suffered from this complication.

In subdividing the patients with coronary disease under the age of 40 for further analysis, one sees, from table 3, that twenty-one had angina pectoris without evident coronary thrombosis during the period of clinical observation. Although the percentage mortality to date for this group has been high (53 per cent) and the deaths frequently sudden, the patients have lived longer (average, 64 years for the entire series) than any other group except the eight under 30, who have lived an average of 74 years.

Coronary thrombosis uncomplicated by angina pectoris occurred in twenty-nine cases (37 per cent of seventy-eight cases of coronary thrombosis). This figure seems unusually high and, if borne out by subsequent observations, would appear to afford one of the exceptions in the manifestations of coronary disease as we usually see it. According to our experience it is comparatively uncommon in the general run of cases to find absence of anginal distress after coronary thrombosis. In reviewing the clinical history of the young patients, however, one finds that quite a number, particularly among those who had coronary thrombosis in the twenties, are normally active without symptoms and that a few even engage strenuously in such sports as tennis, squash and swimming with no harmful effects. This may be explained in part by the ability of the coronary circulation in early life to regain an adequate function after an insult such as coronary thrombosis, but this observation is offset somewhat by the fact that the average duration of life from onset to death, for ten patients in this group who have died, is only slightly longer (18 years) than for patients of all ages with coronary thrombosis (15 years). The duration from the onset of symptoms for the survivors is 45 years, and the average for the entire twenty-nine patients is 36 years.

Coronary thrombosis and angina pectoris combined were present in forty-nine of our series of 100 cases. From our figures it appears that the combination of the two affords a better prognosis than coronary thrombosis without angina pectoris and that patients who have angina pectoris before coronary thrombosis live slightly longer than those of whom the reverse is true. To be sure we are dealing with a relatively small number of cases, which may account in part for this unexpected finding, but it is possible that the presence of angina pectoris as a constant warning signal may act to make the patient lead a more exemplary life and therefore improve his prognosis.

Postmortem Examination—The ten patients who were examined post mortem all showed more or less atheromatous degeneration, with a variable amount of

fibrosis, and partial or total occlusion of the left coronary artery or one of its main branches. The right coronary artery showed only slight atheromatous changes with two exceptions, and in both these cases advanced changes were present with thrombosis and myocardial infarction.

It is apparent from the foregoing observations that degenerative changes of a remarkable degree do exist in the coronary arteries at relatively early ages. A detailed account of the changes characteristic of coronary disease in early life is found in the work of Leary.²⁹

COMPARISON OF 300 PERSONS LIVING AT AGES PAST 80 WITH 100 PERSONS UNDER 40 WITH CORONARY DISEASE

When we turn to our series of 300 healthy old men and women and compare them in race, ancestral longevity, residence, occupation, exercise, diet, use of tobacco and alcohol and past history of infections with the group of 100 patients with coronary disease under the age of 40 we find only a few prominent differences, and these we must not unduly emphasize until information from many more cases is available.

There is neither time nor space here for the many tables used in the compilation of our data. They have therefore been omitted. To persons who want more detailed information we shall be glad to furnish it by personal communication. When percentages are given, unless otherwise stated, they apply to the entire series of 300 old folks or 100 young patients with coronary disease, as the case may be.

Race Stock—Relatively far more (90 per cent) of the old group, 80, 90 and 100 years old, than of the young group with coronary disease are of British stock. This is probably the result of our method of selection and of other factors, such as time of immigration. Only 44 per cent of the young group are of British stock, 39 per cent are Jewish (mostly Russian born) and the remaining few are largely of Italian, Syrian or Greek stock. The incidence of coronary disease in young Jewish people as shown here demonstrates once more the high degree of vascular vulnerability in this race. However, the method of selection of the young group may have resulted in a somewhat higher incidence of Jewish people. Among those scattered cases occurring at various hospitals and under the care of individual physicians it has been impossible to make an accurate determination of the racial incidence of coronary disease. However, in the private practice of two of us the incidence of Jewish persons is 17.5 per cent and 62 per cent respectively, Jewish patients of all ages comprise 19 per cent and 37 per cent respectively, and those under 40 number 31 per cent and 59 per cent respectively of all cases of coronary disease. Therefore, in confirmation of our figure of 39 per cent Jewish patients among the young coronary cases, it is significant that in early life the percentage of Jewish patients with coronary disease exceeds by far the number encountered in the later decades of life.

Ancestral Longevity—It has been known for a long time that heredity, among other things, has an important rôle in bringing about long life and that to have long-lived ancestors is desirable. Our series of old folks bear this out once more.

Our data regarding the longevity of fathers and mothers of members of both groups is striking. The average at death of the fathers of the old folks (70.8 years) was higher by nine years than the figure for the young group (61.8 years), and for the mothers of

the old folks the average age at death (71.4 years) was greater by fourteen years than the figure for the young group (57.2 years). The mothers of the old people outlived the fathers on an average of less than a year, whereas for the young group the reverse is true but the difference in average ages is more striking, the fathers living nearly five years longer. This agrees with the previous observations of Eppinger and Levine³³ on persons with angina pectoris. They suggested that the defect of vascular vulnerability is transmitted more prominently by the female than by the male parent.

Place of Residence—The majority of the old group (70 per cent) have resided in small towns, villages or the country, in contrast to the young group, whose residence has been almost wholly (82 per cent of ninety-two persons) in large cities.

Life tables for 1930 compiled by the Metropolitan Life Insurance Company³⁴ regarding the expectation of life at specified ages show that the life of the rural dweller in the United States is, on the average, four or five years longer than that of the urban resident. In 1901 the average was approximately nine years longer for the rural resident. Industrialization, with a shift in population, has no doubt been responsible for this changing mortality. It is apparent therefore that the majority of our young patients with coronary disease are handicapped to the extent of four or five years from the very outset.

Occupation—Slightly more than half of the old men were professional (30 per cent) or business (23 per cent) men, and the remainder (47 per cent) were of the so-called working class (e.g., farmers, carpenters and mechanics). About three fourths of the young men were professional (19 per cent) or business (50 per cent) men or otherwise engaged in some sedentary work (8 per cent). The remaining fourth were artisans. None were farmers. The number who designated themselves as day laborers was quite small in both series.

The women in both groups were predominantly houseworkers, with the exception of a few unmarried ones who in their earlier years worked as teachers or seamstresses and later as housekeepers. The four women in the young group were all housewives.

Exercise—As for exercise, there is a wide difference in the two groups. Ninety-one per cent of the old group had exercised considerably to well beyond middle life and many of them, particularly those who had worked hard outdoors, were still moderately active. One man of 86 reported skating several miles daily during the winter when the river was frozen over. Fifty-two per cent of sixty-seven of the young group were sedentary in habit and exercised very little, 31 per cent exercised moderately and 16 per cent much. A considerable number of the young group had been strenuously active in athletics in their younger days, but only a few continued to exercise regularly. The types of occupations in which these young persons are engaged perhaps account in part for their habits of exercise. Long hours and confining work leave them little free time for adequate exercise, so important in maintaining a good state of health.

Diet—The older group claims to have eaten more moderately than the younger group, but here a difficulty arises in that a man past 80 whose diet is almost always frugal may have forgotten an enormous appetite present in youth. However, when we take into consideration

the higher proportion of heavy-set or fat persons in the young group as compared with the old group in early life, the chances are that the young group have in fact eaten more heartily.

Of late it has been suggested that certain foods rich in cholesterol, chiefly eggs, milk and butter, eaten in adult life in excess may be a factor in the production of atherosclerosis.³⁵ It is true of our two series that eggs and milk were consumed in somewhat greater quantity and with greater regularity by the young patients with coronary disease than by the old folks, but many of the aged who are still well and active stated that they had consumed eggs and milk regularly every day for most of their lives.

Our data, therefore, do not permit us to draw any definite conclusions regarding diet in the production of coronary disease, although further study may show that, as with diabetes, it is the combination of faulty metabolism plus faulty diet that is important.

Use of Tobacco—Owing to the almost total abstinence from tobacco and alcohol by the women, only men are considered in this comparison and the one to follow.

Although a fair number of the old folks (43 per cent) used tobacco moderately, there were far more total abstainers (44.2 per cent) than in the young group (6.7 per cent of eighty-eight persons) and far fewer heavy users of tobacco in the old group (4.2 per cent) than in the young group (5.8 per cent of eighty-eight persons). Including the occasional users of tobacco, 55.8 per cent of the old group were smokers and 44.2 per cent nonsmokers, but in the young group 93.3 per cent were smokers and 6.7 per cent nonsmokers.

This striking difference between the two groups in the use of tobacco is of interest, and the young group affords an exception to the observations reported in 1934 by White and Sharber³⁵ on a series of 750 patients of all ages with angina pectoris compared with a series of 750 persons without angina pectoris of the same ages, proportion of sexes and walks of life, which showed relatively little difference in their past use of tobacco, with few exceptions. It would appear now that the younger patients with coronary disease (angina pectoris) may fall among the exceptions.

Alcohol—In the use of alcohol the differences between the old folks and the young group are far less striking than in the use of tobacco. Nearly 50 per cent of the old group were total abstainers from alcohol, in contrast to 30 per cent in the young group. The occasional, moderate and heavy users of alcohol were slightly greater in number in the young group. Among the old men 83.7 per cent were total abstainers or occasional users of alcohol, in contrast to 74.8 per cent in the young group. The opinion, held by many, that alcohol may act as a prophylactic in the prevention of arteriosclerosis is neither disputed nor confirmed by these figures.

History of Infections—When we come to the history of infections it is surprising to discover that with the exception of diphtheria and pneumonia the older group suffered considerably more from severe infections than did the younger.

It would appear therefore that infections do not have an important role in the early production of coronary disease.

Body Build, Nervous Sensitiveness and Stature—The characteristic habitus of 83 per cent of the old group in early life was average or thin and lean, 15 per

³⁴ Rural versus Urban Longevity. Metropolitan Life Insurance Company Statistical Bull. 16:1 (July) 1935.

³⁵ White P. D. and Sharber Trimble. Tobacco, Alcohol and Angina Pectoris. J. A. M. A. 102:655 (March 3) 1934.

cent were heavy set and only 2 per cent distinctly fat. In contrast nearly 70 per cent of seventy-eight patients in the young group were robust in stature and more than one third of these were distinctly fat. Approximately 25 per cent of seventy-eight patients in the young group were of average build, and a few were thin and lean.

Nervous sensitiveness and nerve strain were considerably greater in the younger group and practically negligible in the older group. No doubt this is due to the fact that the young people were almost wholly urban dwellers and subject to the strenuous competition and other stresses of modern life in a large city. Racial factors may also enter here.

SUMMARY AND CONCLUSIONS

Approximately 17 per cent of all coronary disease occurs in persons under 40. The ratio of men to women is 24:1, which is about six times greater than is generally encountered. Hypertension is less common than in persons of all ages with coronary disease, but was present in a high proportion of the women (three out of four) in the young group. Its influence on the prognosis is slightly unfavorable. Considerably more of the young people (54 per cent) than of the patients of all ages with coronary disease have hearts that are normal in size. In general the electrocardiographic observations were much the same for the young as for older patients, with perhaps fewer permanent or serious conduction defects. Such conditions as diabetes and thrombo-angitis obliterans were relatively uncommon. Cardiac neurosis was fairly common as a complication.

The prognosis of coronary disease in early life is just as difficult and as uncertain as every student of coronary disease has found it at any age. Of the 100 patients in our series thirty-six have died and sixty-four are alive. There were only two immediate fatalities, both from coronary thrombosis. Of the thirty-six who died, thirty-three died of cardiac disease, eighteen died very suddenly, thirteen of evident coronary thrombosis and two of congestive heart failure. Of the sixty-four patients still living, forty-two are working full time. The remainder are partially or totally disabled because of cardiac symptoms (chiefly angina pectoris). The prognosis of coronary disease under the age of 40, regardless of the nature of onset or the clinical course, is better by two and one-half years than in the average case of coronary thrombosis and nearly the same as in the average case of angina pectoris. For coronary disease under the age of 30, the average duration of life of those who have died and of the survivors (74 years) far exceeds the average period of survival for any other group regardless of the clinical manifestations.

In comparing coronary thrombosis in youth and at all ages one finds that the average period of survival is 43 years for the former and 24 years for the latter, both living and dead. The same comparison of angina pectoris in youth and at all ages shows the difference to be very slight, the period being 52 years for the former and 49 years for the latter. This is accounted for by the much greater incidence of coronary thrombosis in the young group with angina pectoris. The average period of survival for persons with angina pectoris alone in early life (64 years) is better than for persons with coronary thrombosis alone (36 years), but it would appear from our figures that the combination of the two diseases affords a better prognosis (47 years) than coronary thrombosis alone and that persons who have angina pectoris before

coronary thrombosis live slightly longer (53 years) than those of whom the reverse is true (41 years).

A comparison of the mode of life of our 100 patients with coronary disease with that of 300 persons living at ages past 80 revealed a few prominent differences, but these must not be emphasized until information from many more cases is available. Relatively far more (90 per cent) of the old folks than of the young group with coronary disease were of British stock, but here selection and other factors, such as time of immigration, may well enter. There were no persons of Jewish extraction in the older group, whereas 39 per cent of the young group were Jewish. Long-lived ancestors were more common to the aged group. However, it is of interest that the fathers of the younger group who died outlived the mothers by an average of five years. This relationship is usually reversed by several years. The majority of the old group have resided in small towns, villages or the country, in contrast to the young group, whose residence has been almost wholly urban. The younger group consisted largely of business or professional men. Among the old folks the occupations requiring physical activity were more common. A large number of the old group had exercised considerably to well beyond middle life. The young group were for the most part sedentary in habit and exercised very little.

The older group claimed to have eaten more moderately and perhaps more sparingly of such cholesterol-containing foods as milk and eggs. Tobacco was used in greater quantity and by a greater number in the young group, the incidence of smokers being 93 per cent, which exceeds even the high incidence in the general population. The use of alcohol differs less widely for the two groups. There were slightly more total abstainers in the old group and few heavy drinkers in either group. With rare exceptions a history of serious infections (e.g., smallpox, typhoid fever and malaria) was much more common in the older group. A greater proportion of the older group were exemplary in their sleeping habits, and fewer of them were constipated. Nearly 70 per cent of the young group were robust in build or distinctly fat, whereas 83 per cent of the old folks were of average build or had been thin and lean for most of their lives. Nervous sensitivity and strain were frequently encountered in the young group but practically negligible in the older group.

We may therefore draw the following conclusions regarding coronary disease in the early decades of life. Men are overwhelmingly the victims. Hypertension as an important factor is predominant in women. A greater number of young patients than of patients in general may be expected to have hearts that are normal in size. There are fewer complications, and diabetes or evident peripheral vascular disease is uncommon. The duration of life for those who died and the life expectancy of the survivors is greater than for patients of all ages with coronary disease, but the susceptibility to sudden death is just as great. Inheritance and ancestral longevity are important factors in the early occurrence of coronary disease. Racial factors no doubt are also of importance in view of the high incidence of Jewish people in our series of 100 patients. Urban life, sedentary occupations and habits, possibly excesses of diet, the excessive use of tobacco, overweight and increased nervous sensitivity and strain all appear to be more predominant on the part of young patients with coronary disease than on

the part of persons who have achieved long life. Alcohol and serious infections do not seem to play an important rôle.

Although we still have much to learn about the underlying cause or causes of coronary disease, this study has afforded certain clues which offer a challenge to us and to those who follow to pursue this important and interesting subject to its final solution.

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ABSTRACT OF DISCUSSION

DR H M MARVIN, New Haven, Conn. This excellent contribution is most important because it demonstrates clearly that coronary arterial disease in young people is not a rare condition. I have seen a moderate number of cases of coronary thrombosis in young people in their thirties and I think that without exception the physicians in charge had considered this diagnosis, only to reject it because of their belief that the patients were too young. Surely the time has come to emphasize that coronary arteriosclerosis may occur, literally, from infancy onward and is not particularly uncommon after the age of 30. Although it seems to me important that physicians should be familiar with this conception, I wish to comment briefly on the extraordinary infrequency of angina pectoris in young women. Coronary thrombosis is a relatively easy diagnosis to make, because it rests in most cases on demonstrable, abnormal, objective observations. The diagnosis of angina pectoris, on the contrary, rests exclusively on the history given by the patient, and a history suggestive of angina pectoris in young women should be received with great skepticism. As a matter of fact, one almost never receives from these young women a history that is wholly typical. They may have pain which is typical in its location, duration or radiation. If it is typical in these respects it is apt to occur in the absence of the usual provocative factors, namely, exertion and emotional excitement, or it may be unresponsive to glyceryl trinitrate or may be associated with dyspnea or with some other symptoms that are not a part of the recognized anginal syndrome. Drs Glendy, Levine and White have not had opportunity to refer to the recent work of Winternitz and his collaborators at New Haven. Those who have had the opportunity to hear Dr Winternitz's inspiring and convincing talk, and to see his amazing collection of photographs and drawings, will agree with me that he has demonstrated the extreme importance in this connection of hemorrhages in the vessel wall. I believe that this represents a vital contribution, probably the most important of recent years, to the pathogenesis of the condition.

DR W D STROUD, Philadelphia. While working with Sir James Mackenzie in St Andrews in 1920, I remember he used to say the age of 40 was the danger line. According to him, if a patient over 40 complains of symptoms suggesting cardiovascular disease, it is necessary for the physician to be absolutely positive nothing is wrong with the heart before he might assure the patient his symptoms were not cardiovascular. If a patient was under 40 years of age, the physician must be very sure there was some definite evidence of organic cardiovascular disease before he was justified in making a heart diagnosis. This paper is most timely, since Sir James's ideas have become popular. Now it is known a patient even in his twenties may have coronary disease. In the records of the five hospitals of which I am cardiologist, the youngest patient so far definitely diagnosed as having coronary thrombosis is a Jew of 28. Dr Wolferth tells me there has been no younger patient in the records of the University of Pennsylvania Hospital.

DR PAUL D WHITE, Boston. I want to say just a word about the electrocardiogram in these young people, something that we didn't have time to take up in detail. Dr Glendy and I had obtained twenty-nine cases from our own practice, Dr Levine helped us with twenty-three more, and the rest of the 100 cases were from scattered hospitals and physicians in Boston. To be on the safe side at the present time, we made the diagnosis of coronary disease in this group on the basis of clinical evidence in ninety-nine of the cases, that is, there was either certain coronary thrombosis or certain angina pectoris of coronary arteriosclerotic origin. Only one of the 100 cases was

diagnosed on the basis of the electrocardiogram alone. In other words, we erred on the safe side. I am perfectly certain that a good many other patients, especially young people, have only electrocardiographic evidence of coronary disease. As we study this problem further, we shall be making the diagnosis probably more often on the basis of the electrocardiogram alone. But we must be very cautious not to diagnose coronary disease on very slight changes in the electrocardiogram. There is now a danger of overdiagnosis if we aren't careful. We may swing so far in this direction that we may establish still more strongly the cardiac neurosis that is becoming common. Finally, a word about tobacco and coronary disease, a problem of ever current interest. Some years ago Dr Sharber and I reported a series of 750 patients with coronary disease and compared them with 750 control individuals of the same sex and age incidence without coronary disease. We found that there was very little difference in the use of tobacco or alcohol in these two groups. We did make the statement then, which we would confirm now, that occasional individuals have a definite sensitiveness to tobacco and, owing to increased blood pressure, increased heart rate, or other effects, have an increase of angina pectoris as a result of the overuse of tobacco. In this study of young persons we found a high incidence of the heavy use of tobacco, in contrast to the old persons. But I myself am already old enough to remember the days in Sunday school when I was told that tobacco was the devil's own invention and that to smoke cigarets was not only putting nails in my coffin but also sacrilegious. Nowadays the parsons of the country smoke about as much as anybody else, and therefore, naturally, tobacco is much more used at the present time by young people than by these older persons, with whom we have compared them, when they were young sixty or seventy years ago. We must bear that in mind before drawing any conclusions.

THE TREATMENT OF CORONARY SCLEROSIS AND ANGINA PECTORIS

BY PRODUCING A NEW BLOOD SUPPLY
TO THE HEART

HAROLD FEIL, M D

AND

CLAUDE S BECK, M D

CLEVELAND

This report concerns the results obtained in the treatment of coronary artery sclerosis and intractable angina by grafting vascularized tissues on the heart. Up to the present time we have done this operation on twenty-five patients. A sufficiently long interval of time has elapsed since operation so that we can begin to evaluate the clinical results of this operation.

The experimental basis for this operation has been published.¹ The anatomic arrangement of the heart and pericardium deserves some comment. Unlike any other organ, the heart is actually anchored in the body. It is anchored by the great veins and arteries and also by some fat, lymphatics and nerves that lie between these vessels. The fat at the base of the heart contains blood vessels that form anastomoses between the coronary arteries and other branches of the aorta, including the internal mammary, pericardial, phrenic, intercostal and esophageal.² These anastomoses were

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Read before the Section on Pharmacology and Therapeutics at the Eighty-Eighth Annual Session of the American Medical Association, Atlantic City, N. J., June 9, 1937.

1 Beck C S, and Tichy V L. The Production of a Collateral Circulation to the Heart. I. An Experimental Study. *Am Heart J* 10: 849 (Oct.) 1935. Beck C S. The Development of a New Blood Supply to the Heart by Operation. *Ann. Surg* 102: 801 (Nov.) 1935.

2 Hudson C L, Moritz A R, and Wearn J T. The Extra-cardiac Anastomoses of the Coronary Arteries. *J Exper Med* 56: 919 (Dec.) 1932. This paper contains references to the literature.

demonstrated by the injection of india ink into the coronary arteries and by following the spread of the injection mass into the mediastinal tissues. Similar communications exist in the dog. In the absence of coronary disease these anastomoses are small, and it is doubtful whether they carry any significant quantity of blood. However, after the coronary arteries have been occluded by placing silver bands around the arteries, these anastomoses definitely increase in size and number, and it appears that these vessels may take on a real compensatory function.³ It was also shown that adhesions to the heart contain blood vessels that connect with the coronary arteries.⁴ India ink injected into the coronary arteries was traced through the adhesions into the pericardium, diaphragm and chest wall. These injection studies were carried out on human hearts that had adhesions from rheumatic heart disease. Similar anastomoses have been demonstrated by experimental studies. After the coronary arteries of a dog were occluded and grafts of skeletal muscle or fat were placed on the myocardium, anastomoses between the coronary arteries and the vessels of the grafts were demonstrated by injection studies.⁵

Do these arterial communications present in basilar fat and in parietal grafts or adhesions actually carry blood? Are they of any real functional value? In the presence of normally patent coronary arteries we do not believe that these anastomoses are of any functional significance. The blood vessels are anatomically present but do not function as anastomotic channels. In the presence of coronary arteries that are becoming occluded we believe that these anastomoses actually carry blood to the heart. That they carry blood was demonstrated by one or two observations made by Beck at operation on the human heart. In an operation for the resection of a compression scar a ribbon-like adhesion was found extending from the left ventricle to the thick pericardial scar. When the adhesion was cut, brisk bleeding occurred and each end of the transected tissue had to be ligated. The blood from the cardiac end of the adhesion came from the coronary arteries because there was no other possible source for it.

Another observation was made in the course of an operation in one of the cases reported in this paper. This patient had coronary artery sclerosis and at operation some mediastinal fat, the pericardium and the left ventricle were sealed together at the site of an infarct. An incision was made in the fat and while this was being done brisk bleeding was encountered. The fat was richly vascularized over the adherent area and the vessels carried blood. Are such extracoronary anastomoses of functional value in the presence of coronary artery occlusion? The clinical results after grafts are placed on the heart will help answer this question, as will also the data obtained by injection studies of the heart and grafts after death. Our report concerns the clinical results of the operation. The injection studies must await the future, because all the patients who withstood the operation and the immediate postoperative period are still living. Perhaps this fact in itself is of significance.

SELECTION OF PATIENTS FOR OPERATION

In selecting the patients for operation the requirements were (1) unequivocal evidence of coronary sclerosis, (2) inability to get along on medical treatment, drugs and rest with any degree of comfort and (3) absence of circulatory failure (with one exception). Hypertension was not regarded as a contraindication. Diabetes mellitus is no contraindication to operation, but it should be well controlled. The age of the patients ranged from 42 to 69 years. None had had recent infarcts. These requirements gave us a group of patients with advanced disease. They were poor risks for any kind of operation but we felt that we should take this group to determine the benefit, if any, that the operation offered. All presented the classic picture of Heberden's angina of effort and of emotion. Most of the patients were relieved by the nitrites, but this therapeutic test is not always diagnostic because of the side effects of the nitrites, headache and vertigo that are occasionally encountered.

SPECIAL STUDIES

Each patient was kept in the hospital for a period of from five to ten days, during which time detailed studies of the physical condition were carried out. These studies consisted of determinations of exercise tolerance, cardiac output, circulation time, roentgenograms of the legs and chest, kymographs of the heart, basal metabolism, blood dextrose, blood urea nitrogen, blood cholesterol, blood uric acid, phenolsulfonphthalein excretion, urea clearance, roentgenograms of the gallbladder and stomach when indicated, vital capacity, and blood Wassermann reaction. The tolerance for exercise was determined by means of the standard two step test. The patient was placed under basal conditions and the pulse rate, arterial pressure, respiratory rate and electrocardiogram were taken. In each instance the patient was free from pain before the test was started. Then the patient climbed the steps at the rate of from twelve to fifteen single trips per minute until a characteristic anginal attack occurred. The patient was then placed at rest and determinations of the pulse rate, arterial pressure and respiratory rate and an electrocardiogram were taken again and repeated after the pain subsided. Also the character of the pain was recorded. Similar exercise tolerance determinations were carried out on another day twenty minutes after the administration by mouth of a one-hundredth grain (0.0006 Gm.) tablet of glyceryl trinitrate. It was suggested by our colleague Dr. Roy Scott that the increase in the tolerance for exercise after glyceryl trinitrate as sometimes observed might give information concerning the degree of sclerosis present in the coronary arteries.

The minute volume output of the heart was measured by means of the Grollman method. The output determinations were within normal limits on each of the patients, and these studies will not be recorded. The arm to tongue circulation time was determined by the intravenous injection of dechlorin (sodium dehydrocholate). The circulation time is prolonged in cases of cardiac failure and we used this test as a further check on the condition of the circulation. The roentgenograms of the legs were taken to show the condition of the arteries. The renal function tests were made because of the possibility of uremia developing after operation in patients with severe arterial or arteriolar sclerosis. The results of these studies cannot be given in this paper and reference will be made only to the important deviations from normal.

³ Mantz, F. R. and Beck, C. S. The Augmentation of Collateral Coronary Circulation by Operation. *J. Thoracic Surg.* to be published.
⁴ Moritz, A. R., Hudson, C. L. and Orgain, E. S. Augmentation of the Extracardiac Anastomoses of the Coronary Arteries Through Pericardial Adhesions. *J. Exper. Med.* 56: 927 (Dec.) 1932. This article also contains references to the literature.
⁵ Beck and Tichy.¹ Beck,¹ Mantz and Beck.³

THE BECK OPERATION

The operation consists of grafting vascularized fat and muscle on the heart. Skeletal muscle from the chest wall is readily available. Available fat lies in the mediastinum attached to the pericardium. Subcutaneous fat is also available and experimentally we used omentum brought up through an opening in the diaphragm. In the early operations costal cartilages on each side of the sternum were removed and a large graft of each pectoralis major muscle was applied to the right and left ventricles. The epicardium was removed so that the grafts came into contact with the coronary vessels. The pericardium was roughened so that the pericardial fat receiving its blood supply from extracoronary sources became attached to the myocardium. In the later operations the approach was made only from the left side of the sternum and a graft from the left pectoralis major muscle was used. Powdered beef bone was placed on the surface of the heart to produce a low grade inflammatory reaction between the grafts and the heart. The beneficial effect of procaine applied directly to the heart was worked out by our associate Dr. Frederick R. Mautz, and we now use procaine at operation.⁶ In the later cases the mediastinum was drained into the left pleural cavity. This is an important step in the operation and was described by our former associate Dr. R. A. Griswold.⁷ Quinidine was used as a routine before operation to reduce the irritability of the heart, and it is used after operation if necessary. We are prepared to defibrillate the ventricles should this complication occur at operation.⁸ The patient was placed in an oxygen tent as a routine after operation. The importance of these developments was indicated by the reduction in mortality. In the first twelve patients the mortality was 50 per cent. In the last nine patients the mortality was zero. Even though the patients are bad risks for any operation, we do not believe that the mortality in the future will be high for this operation on the heart.

REPORT OF CASES IN WHICH SURVIVAL OCCURRED

CASE 1—Arteriosclerotic heart disease and angina pectoris of nine years' duration, severe for five years, moderate generalized arteriosclerosis with hypertension, arterial pressure systolic 164, diastolic 92 mm. of mercury, moderate chronic pulmonary emphysema. A man, aged 48, Yugoslavian, a farmer, with gradually diminishing exercise tolerance, finally became incapacitated for any work because of pain. The exercise tolerance test, sixty trips on the steps, brought on precordial pain, fatigue and dyspnea. Operation was done Feb. 13, 1935. Four months later he began to do light work around the hospital as a gardener and made eighty-two trips on the steps without pain but stopped because of dyspnea. The patient has no symptoms at present and considers himself cured. We consider the result in this, the first patient ever to have this operation performed, to be excellent.

CASE 3—Arteriosclerotic heart disease and angina pectoris for five years, severe myocardia from total thyroidectomy in 1934. A business man aged 51, with severe angina of effort and of emotion became totally incapacitated. The exercise tolerance test, fifteen trips on the steps, produced complete exhaustion. Operation was done June 28, 1935. The amount of thyroid extract that the patient was able to take without

producing pain after operation was two or three times the amount taken before operation. Tolerance for exercise improved only slightly. The patient believes that the operation has lessened the pain a great deal but he remains weak. We believe that this patient has extensive fibrosis of the myocardium.

CASE 4—Arteriosclerotic heart disease, coronary sclerosis and angina pectoris of five years' duration, generalized arteriosclerosis, diabetes mellitus. A surgeon, aged 50, with angina of effort and emotion, was totally incapacitated in December 1932. Subtotal thyroidectomy was done in January 1933. He had a coronary thrombosis in February 1933. The patient had had diabetes mellitus since 1918, requiring insulin. He had had pain in the legs for three years on walking. A roentgenogram of the legs showed calcification of the vessels. The electrocardiogram showed a deep Q₁. Operation was done July 9, 1935. The angina has improved. He can stand emotional strain better. Exercise tolerance has increased from eighteen trips before operation to thirty-two trips at present. The patient is well satisfied with the result.

CASE 6—Arteriosclerotic heart disease and angina pectoris for two and one-half years, generalized arteriosclerosis and intermittent claudication. A machinist, aged 55, had the typical anginal syndrome brought on by exertion or emotion. The symptoms began in April 1933 after a severe attack of pain due to coronary thrombosis. He returned to work but tolerance for exercise progressively decreased, and in March 1935 he became totally incapacitated. The electrocardiograms showed a reversal of T in the chest lead and after exercise there were the typical changes seen in coronary arteriosclerosis. Operation was done August 31. The patient

returned to his former job five months after operation. Exercise tolerance increased from twenty-four trips before operation to thirty-seven trips after operation and the patient had to stop the step test not because of anginal pain, as before operation, but because of claudication. Because of these symptoms in his legs the patient changed his job in July 1936 to that of a storekeeper. The patient has no anginal pain, one year and eight months after operation. In this case of generalized arteriosclerosis and with a remote myocardial infarct, the result is excellent.

CASE 9—Arteriosclerotic heart disease and angina pectoris for three years and three months. A painter, aged 45, was forced to reduce his activities and finally was totally unable to work for two years and three months. Angina was produced by seventy trips on the steps and the electrocardiogram, which at rest was normal, showed characteristic changes in the ST interval. Glyceryl trinitrate increased the exercise tolerance to 102 trips. Operation was done Jan. 2, 1936. A year later he returned to his former work as a painter and

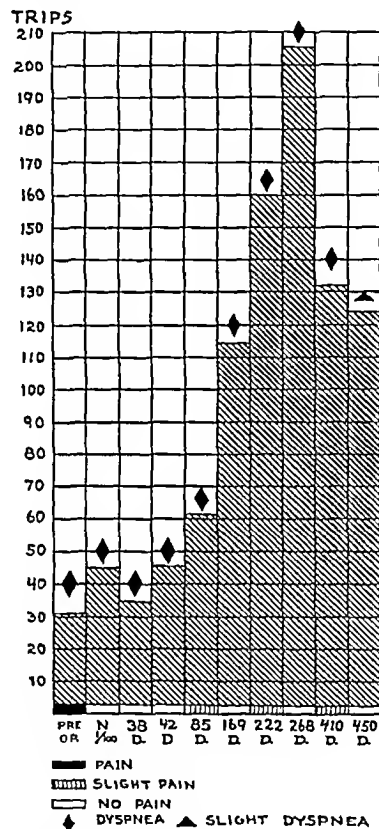


Chart 1 (case 11) —Studies obtained from step test before and after operation. The increase in trip tolerance was 303 per cent.

6 Mautz F R. Reduction of Cardiac Irritability by the Epicardial and Systemic Administration of Drugs as a Protection in Cardiac Surgery. *J. Thoracic Surg.* 5: 612 (Aug.) 1936.

7 Griswold R A. Chronic Cardiac Compression Due to Constricting Pericarditis: Relief by Pericardiectomy, with a Note on the Value of the Roentgenogram. *J. A. M. A.* 106: 1054 (March 28) 1936.

8 Mautz F R. Resuscitation of the Heart from Ventricular Fibrillation with Drugs Combined with Electric Shock. *Proc. Soc. Exper. Biol. & Med.* 36: 634 (June) 1937. Beck C S and Mautz F R. The Control of the Heart Beat by the Surgeon with Special Reference to Ventricular Fibrillation. *Ann. Surg.* 106: 525 (Dec.) 1937.

was able to do a good day's work with little discomfort. His ability to walk has not increased in proportion to his ability to take other exercise. He can take fifty-two trips on the steps without pain and without glyceryl trinitrate. It has been seventeen months since the operation and the patient has been restored to economic independence. On walking long distances he still has a recurrence of pain, but he has sufficient reserve to enable him to work a full day.

CASE 11—Arteriosclerotic heart disease and angina pectoris for sixteen months, probable coronary thrombosis of onset of illness. A tailor, aged 42, had angina of effort and emotion. He became totally incapacitated. Rest and drugs failed to give relief. Angina was produced by twenty-four trips on the steps. After glyceryl trinitrate he was able to make forty-six trips before anginal pain was felt. The conventional electrocardiogram was normal but T in the chest lead was reversed in direction. Operation was done Feb 22, 1936. The patient is now able to work. He can tolerate ninety-seven trips on the steps and stops because of dyspnea and not because of pain (chart 1). He is entirely comfortable.

CASE 13—Arteriosclerotic heart disease and angina pectoris for eleven years, probable attack of coronary thrombosis six years before admission and another attack seven months before admission, generalized arteriosclerosis and hypertension, early cardiac failure. A man, aged 58, an accountant, had dyspnea and edema of the ankles, which had appeared recently. The heart was enlarged. The electrocardiogram showed regular sinus rhythm, splintering of QRS in all leads and inversion of T in leads 1 and 2, T in the chest lead was reversed. The circulation time was twenty seconds. Because the patient was showing signs of heart failure, the usual operation was not done. May 25, 1936, one costal cartilage was removed, the pericardial cavity was opened and powdered beef bone was placed in the pericardial cavity. The congestive failure responded to treatment, but four months later the patient died. There was no autopsy.

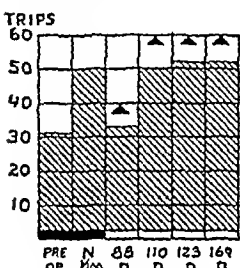


Chart 2 (Case 20) — Studies obtained from step test before and after operation. The symbols have the same meaning as in chart 1. The increase in trip tolerance was 68 per cent.

have the complete operation carried out, he cannot be included in the analysis of results.

CASE 15—Arteriosclerotic heart disease and angina pectoris for five years. A salesman, aged 48, could not use nitrites because these drugs produced headache. He had restricted his activities to a minimum in order to prevent pain. The electrocardiogram showed inversion of T₂ and displacement of ST in the chest lead beyond the normal limit. The left ventricle was enlarged. Operation was done July 25, 1936. Some improvement followed and the patient returned to work. Exercise tolerance increased from forty-two trips over the steps, before operation, to sixty-one trips ten months later. Up to three months ago the improvement was only slight or moderate, but during the last three months the patient has shown marked improvement. He can do more work and the pain is considerably reduced.

CASE 17—Arteriosclerotic heart disease and angina pectoris in remission and secondary anemia. A machinist, aged 50, had a typical history of angina of effort for eighteen months. The basal metabolic rate was minus 30 and the patient took small doses of thyroid. The electrocardiogram revealed a left axis deviation and QRS of normal voltage. The T was almost iso-electric in all leads including the chest lead. Operation was done Nov 18, 1936. Congestive heart failure developed after operation and cleared up with appropriate treatment. Tolerance for exercise increased from thirty-six trips before operation to fifty trips after operation. The dose of thyroid has been increased. The patient definitely feels better than before operation.

CASE 18—Arteriosclerotic heart disease with angina pectoris of nine months' duration. A Green water, aged 48, had been incapacitated from work for six months. The T wave in lead 1 of the electrocardiogram was inverted. In the chest lead it was also reversed. The left ventricle was questionably enlarged. Operation was done Nov 21, 1936. Congestive heart failure developed after the operation. The patient has shown gradual but slow improvement. He is now working. He takes an occasional tablet of glyceryl trinitrate. Before operation he used five or six tablets daily. Circulation time was twenty-seven seconds and the heart was slightly enlarged to the left. The myocardium has probably been permanently damaged. It is significant that there is less pain.

CASE 19—Arteriosclerotic heart disease and angina pectoris of seventeen months' duration. A coal miner, aged 49, was totally incapacitated during the entire course of his illness. He had severe pain at rest, and morphine was given for the pain. Theophylline with ethylene diamine and glyceryl trinitrate gave no relief. The electrocardiogram showed alterations indicative of a remote posterior and basal infarct. Operation was done Dec 3, 1936. Marked improvement followed operation, but within the last two months there has been some recurrence of pain. The patient lives in another city and has not returned for study.

CASE 20—Arteriosclerotic heart disease and angina pectoris for one year. A salesman, aged 68, presented the typical symptoms of angina pectoris and became totally incapacitated. There was no episode suggestive of coronary thrombosis. The left ventricle was slightly enlarged. The arterial pressure was 150 systolic, 100 diastolic. Calcification of the peripheral arteries was present. The electrocardiogram showed regular sinus rhythm, left axis deviation Q₁ and Q₂, and a normal chest lead. After exercise the chest lead showed the ST portion sharply elevated (upright deflection positive in value). The circulation time was twenty-five seconds. Operation was done Dec 5, 1936. The patient became free from pain and discontinued all treatment. His activities are increased (chart 2). The result is excellent. He can walk with comfort and has started to work.

CASE 21—Arteriosclerotic heart disease and angina pectoris of five years' duration, mild diabetes mellitus. A clerk, aged 51, failed to benefit from medical treatment, paravertebral injection with alcohol failed to give relief and he became totally incapacitated from work. The left ventricle was slightly enlarged. The peripheral arteries were calcified. The electrocardiogram was normal at rest but after exercise showed definite alterations from normal. Operation was done Jan 30, 1937. The patient was much improved following operation. The pain has not completely disappeared but it is less severe. He has returned to work.

CASE 22—Arteriosclerotic heart disease and angina pectoris, thrombo angitis obliterans. A cook, aged 42, had angina of effort and emotion for five and one-half years and was incapacitated from his work for two years, he took morphine for the pain. The left foot was cool, and the arterial pulse was not palpable in the left leg. The electrocardiogram showed no significant changes before or after exercise. Operation was done Jan 30, 1936. He had several anginal attacks in the early postoperative period. Later he showed striking improvement. He is up and about and does not require medication. The interesting question arises whether the disease of the coronary arteries bears any relationship to the thrombo angitis obliterans of the leg.

CASE 23—Arteriosclerotic heart disease and angina pectoris of seven months' duration. A molder aged 49 had a typical history of angina of effort for seven months and had to give up work four months before admission. Medical care with a long rest in bed did not increase his tolerance for exercise. The anginal syndrome was produced by fifty three step trips and after glyceryl trinitrate he was able to make ninety trips. Electrocardiographic changes were present during the induced angina. The circulation time was twenty seconds. Operation was done March 6 1937. The patient states that he has felt better since the operation, but an exercise tolerance test two months after operation showed twenty-eight trips. It is too early to determine the result in this case.

CASE 24—Arteriosclerotic heart disease and angina pectoris of five years' duration A tailor, aged 50, in November 1933 and again in August 1936 had myocardial infarcts. They were anterior and apical, and posterior and basal. Invalidism followed the second attack and he was barely able to go to his shop. Slight exertion and emotional strain brought on pain. The left ventricle was slightly enlarged. The circulation time was twenty-three seconds. The venous pressure was 15 cm of physiologic solution of sodium chloride. The patient had extensive myocardial fibrosis and was a doubtful candidate for operation. Operation was done April 9, 1937. At the operation the heart beat was feeble and it was apparent that we were dealing with a seriously damaged muscle. The patient states that he has been greatly relieved from pain following the operation and he is returning to his shop. That the patient went through the operation and reports that he has obtained some relief from pain seems to be significant because we believe that he has a damaged myocardium. A longer period is necessary before we can make a final appraisal of the result in this case.

CASE 25—Arteriosclerotic heart disease and angina pectoris of nine years' duration A retired salesman, aged 52, had some attacks which were sufficiently severe to have been caused by coronary thrombosis. The conventional electrocardiogram was normal, but T in the chest lead was reversed in direction. The record taken during the induced anginal attack after exercise showed changes suggesting a posterior and basal infarct. Operation was done April 24, 1937. The patient states that there is some improvement, but it is too early to draw conclusions.

COMMENT

Thirteen patients have been observed for five months or longer after the operation. These patients may be divided into three groups, according to the results obtained. In the first group are patients in whom the result was better than we actually could expect to obtain—no pain, no drug therapy and exercise tolerance definitely increased. In this group are three patients, 1, 11 and 20. The second group contains cases with a result such as one might expect to obtain, considering the nature of the disease that is being treated. The patients in this group have pain, but it is less severe, they take occasional medication, the exercise tolerance has been increased. In this group are nine patients, 4, 6, 9, 15, 17, 18, 19, 21 and 22. In the third group is one patient, patient 3, who had some relief of pain and slight increase in exercise tolerance. There were no patients who were not improved by the operation.

Of the twenty-five patients operated on, sixteen are living and nine are dead. Autopsies were done on seven and in each case an advanced degree of coronary occlusion was found. In most cases extensive, permanent damage was present in the myocardium. Eight of the deaths occurred within one week of the operation. Only one patient died after discharge from the hospital and this patient did not have the usual operation done because he was in failure at the time. It is of interest to note that, while the mortality rate in the first twelve patients was 50 per cent, in the last thirteen patients the mortality was 15.4 per cent. The last nine consecutive patients have gone through the operation without mortality. We believe that we can expect a low mortality in the future.

CONCLUSION

We believe that the results obtained by this operation are encouraging. The beneficial effect of the operation may be explained by several possibilities. One of these is an actual increase in arterial blood to the myocardium. The second is a redistribution of blood

that passes through the coronary arteries. This is brought about by opening up intercoronary communications by surface trauma, grafts and powdered bone.

The opening of intercoronary communications could explain the early improvement noted by many of the patients. Almost without exception, the patients stated that they felt better eight or ten days after the operation than they did before the operation. This early improvement cannot be explained on the basis of blood from the grafts. A third possible factor to explain the improvement may be based on the interruption of nerve pathways from the heart. It is possible that the nerves lying beneath the epicardium are torn when the epicardium is removed.

We feel that thorough investigation should be given to the operation. The procedure is scientifically sound and its effectiveness will probably be increased by future study.

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ABSTRACT OF DISCUSSION

DR WALLACE M. YATER, Washington, D. C. I have followed the work of Drs. Feil and Beck and their associates with interest because of the importance of the problem involved and because of the steady progress made since they first began to use their method. I saw one of the patients operated on and observed several patients on whom the operation had been performed. Dr. Beck's method of encouraging the formation of a new blood supply to the myocardium should appeal to all as the most practical method of treatment so far devised for the treatment of coronary arterial sclerosis. Thus far Dr. Beck has used this method only in advanced cases of this disease. When the method comes to be applied to the less advanced cases, it will come to occupy its proper place in the treatment of coronary sclerosis. It is almost too much to expect a great deal from any form of treatment when the myocardium has become seriously impaired morphologically and functionally by extensive fibrosis. As has been demonstrated by Feil and Beck, even in such cases considerable improvement may result, but far greater benefit will undoubtedly occur in less advanced cases. Also, the mortality should be much less when the operation is used in such cases. In this connection the reduction in the magnitude of the operation as originally performed has made the procedure a much more practical one. The immediate relief of pain in some of the cases following operation is difficult to explain, since some time must be required for any significant amount of new blood vessels to invade the myocardium. However, the fact that the relief in these cases lasts for months and possibly years indicates that the effect is much more than psychologic. Strictly speaking, one would expect the improvement to be delayed for a while and then to be progressive up to a certain point. Whatever the mechanism of this immediate improvement, the fact remains that the patients are improved and remain so. Dr. Beck and his associates are very fair in hoping that other groups will now give this treatment a trial in order to help determine its exact value. In this regard I sincerely hope that only those well qualified and willing to devote much thought and time to the work will undertake it, since discredit may result if halfhearted and inefficient work is done, and years may elapse therefore before the operation finds its proper niche in our armamentarium of cardiac therapy. I wish to emphasize the point that the closest cooperation between the internist or cardiologist and the cardiac surgeon is most vital in this work, not only in the selection of cases but during the operation and in the postoperative care of patients.

DR HERMAN SHUDE, Cleveland. Fourteen months ago I never thought I would be able to face an audience. I am a patient of Dr. Feil's and I have today the advantage of talking as a patient and not as a physician. I do not agree with the last speaker who thinks that the operations in the future will be performed in the early stages of the disease. I think a

patient should get a chance to recover first, repair his myocardium and then, if the angina persists after a year or a year and a half, he has plenty of time to be operated on. In my work on peripheral vascular occlusions I have noticed that sclerotic occlusion was slow in developing. The collateral circulation developed beautifully. If I had a rapid embolus with a retrograde thrombus, the cardiac circulation did not develop properly and the results were not good. I made observations long before I had my coronary accident. Therefore, when the coronary accident took place in my own case I was not much discouraged. I wanted to be operated on but Dr Feil and Dr Beck had refused to comply with my wish. I went to Glenn Springs to get cured by the Neuheim baths. I was associated for eight months with nothing else but patients with coronary disease. Two thirds of the patients ought to go back to work after a proper abstinence from work and with proper optimism. I think that occupational therapy is exceptionally good. I believe in a moderate amount of exercise. I believe every muscle does much better if it exercises. A heart muscle is a muscle like any other muscle and it needs exercise, and surely one doesn't have to put one's patients flat on their backs and tell them there is no chance to recover. If the patient is told that he is going to go back to work and he has to go back to work, he will be better off. After having been a few weeks in a certain place where I was taken by my fellow in charge, I found out that by going back to Atlantic City and Cape May, associating with the young people, doing as McKenzie said, listening to a band of music and playing with the waves, I got along a lot better.

DR ROBERT L. LEVY, New York. Through the kindness of Dr Beck and Dr Feil I have had an opportunity of examining carefully two of their patients. One of the striking characteristics of both these men was an amazing optimism, verging on a state of euphoria. They were delighted with the results. Under the fluoroscope it was apparent that, in spite of the pectoral muscle transplants, there was very little diminution in the contractile power of the heart. The excursions appeared normal in extent, or nearly so. This procedure involves several basic principles. In the first place, it appears to be physiologically sound, there is a defect or an impairment in the circulation of an organ and, by surgical means, an attempt is made to increase that circulation. The procedure, in that respect, is in contrast to total thyroidectomy, which has always seemed to me to be physiologically unsound. In the second place, the operation on human beings has an abundant background of experimental work on animals. In the third place, as has already been mentioned, the study of this group of patients is an example of perfect cooperation between the medical man and the surgeon. I should like to ask two questions. First, what is the explanation for the almost immediate relief of discomfort? Why do these patients say, as did the two seen by me that they have had no recurrence of pain since the day of operation? Second, is there any way of knowing on the basis of animal experiments—for I believe there have been no postmortem studies in any human cases that have been followed for an appreciable length of time—what happens to the collaterals that are developed? When the transplanted pectoral muscle atrophies, do these collaterals disappear or is there reason for believing that they persist?

DR CLAUDE S. BECK, Cleveland. The results of this operation speak for themselves. Dr Feil and I have tried to maintain a detached point of view in evaluating the results, and we are interested only in scientific facts. The patients state that they are improved by the operation. Dr Feil and I agree with Dr Levy that some of the patients are really enthusiastic about the operation. The degree of enthusiasm troubles us occasionally because we are just as anxious as other physicians are to deal with facts rather than with emotional reactions. I should like to answer Dr Levy's question about the blood vessels in the grafts. What happens to the blood vessels after the muscle graft undergoes atrophy, and what happens to them after they have been established for a while. I cannot give a specific answer to this question. It is difficult to settle such problems, even though we have worked on this subject intensively for five years. There are still many things concerning this work that remain to be learned. In view of the fact that

we have done nine operations consecutively without a mortality, I feel that we can recommend the operation to patients with coronary disease. It might be of interest that we have done seventeen operations on the human heart without a fatality. Nine of these were for the grafting of a blood supply to the myocardium and eight of them were for the resection of compression scar on the heart. While this is not a record for future work in the surgery of the heart, nevertheless at the present time it means that there need not necessarily be a high mortality in operations on the heart.

DR HAROLD FEIL, Cleveland. Most of these patients have had very little pain at rest; only with excitement and exercise has pain occurred. Postoperatively they have been kept quiet for from six to eight weeks. Perhaps by that time, if Dr Beck's experimental data are applicable to man, some collateral circulation has developed. We are not misled by the fact that these patients say they feel well soon after the operation. As far as optimism is concerned, these patients all have had the accepted therapeutic procedures for angina pectoris. In fact, two patients had total thyroidectomies, one patient had a spontaneous myxedema, and one patient had a paravertebral alcohol injection. There were two patients taking morphine for the pain. Neither has taken morphine since the operation. One interesting point I did not mention was that postoperatively the electrocardiographic changes persist. The ST deviations following effort appear, even though there is no pain. This is due perhaps to the permanence of the myocardial scar, unaffected by the increased coronary circulation.

THEELIN THERAPY IN THE PSYCHOSES

EFFECT IN INVOLUTIONAL MELANCHOLIA AND AS
AN ADJUVANT IN OTHER MENTAL DISORDERS

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Since the experimental investigation of the effect of theelin (estrone) in involutional melancholia by Werner and his associates¹ in 1934, theelin has been administered to all patients received at Missouri State Hospital No. 4, Farmington, Mo., who had involutional melancholia, and to those whose mental condition was complicated by involutional psychoses. This procedure was not instituted with the hope that the substance would prove to be a panacea for all mental diseases but to alleviate the distressing subjective menopausal symptoms complicating other mental conditions. Frequently these symptoms obscure some other mental illness, making a diagnosis very difficult. In other words, we believe that we receive many patients suffering not only from some other definite psychosis but also from involutional melancholia.

Involutional melancholia per se is considered generally as a distinct clinical entity, and the controlled research previously done with theelin by our group strengthens this contention. Of those patients having involutional melancholia who were treated with theelin during the original experiment¹ at Missouri State Hospital No. 4 in 1934, three additional patients have shown marked improvement and have returned home.

1. Werner, A. A., Johns, G. A., Hoctor, F. F., Ault, C. C., Koller, L. H., and Weiss, M. W. Involutional Melancholia. *Isolated and Treatment*. J. A. M. A. 103: 1316 (July 7) 1934. Werner, A. A., Koller, L. H., Ault, C. C., and Hoctor, F. F. Involutional Melancholia. *Probable Etiology and Treatment*. Arch. Neurol. & Psychiat. 35: 106-1030 (May) 1936.

During the past year larger dosages of theelin have been administered, and we believe that the results obtained are more effective and rapid. During the first month of treatment, from 30,000 to 40,000 international units of theelin in oil was injected, and then the dosages were reduced to conform to the needs of the

TABLE 1—Results of Theelin Therapy in Involuntional Melancholia

Patient	Age	Duration of Treatment Weeks	Improvement	Period of Time Since Dismissal
1 G B	54	4	Slight	Two years
2 H G	43	12	Marked	Two years
3 S G	42	2	Slight	Nineteen months
4 N R	39	22	Marked	One year
5 C H	54	8	Marked	Seventeen months
6 R P	48	6	Marked	Eighteen months
7 B S	42	42	Marked	In hospital
8 J K	42	25	Marked	Six months
9 I B	40	25	Marked	In hospital
10 F P	42	9	Marked	Nine months
11 B W	46	4	Marked	Ten months
12 E S	41	5	Marked	Three months
13 E G	48	4	Moderate	In hospital
14 B F	40	8	Marked	Twenty two months

In the tables the term improvement is employed to mean the rehabilitation of the patient in her social life as to personality and capacity for work. All of these patients still in the hospital have been relieved of the distressing symptoms of hypo ovarianism.

individual patient. The amount used in the original experiments was approximately 5,000 international units in aqueous solution per month, and we now believe that this smaller dosage was responsible for the delayed response of the original group of patients as compared to those treated in this series. Formerly the average hospitalization was for a period of six months, but it is now rare to have a case of true involuntional melancholia require more than three months' hospitalization. Incidentally, there has been no evidence of injurious effects from the theelin used in any of the experiments.

The consensus is that involuntional melancholia constitutes between 3 and 4 per cent of all mental disease. In the mental hospitals of Missouri it has usually comprised from 2 to 4 per cent of first admissions. However, it is a well known fact that many women at the climacteric suffer from mild to marked mental aberrations with concomitant physical and mental handicaps, causing a prolonged convalescence of months to years, but for obvious reasons they are never institutionalized. Therefore, administration of estrogenic substances should prove a boon to these women, a relief to their families and an economic benefit to the nation.

ADDITIONAL INVOLUTIONAL PATIENTS TREATED

Since the original experimental work, fourteen additional patients with involuntional melancholia have received theelin therapy and eleven of these patients are socially adjusted at home, as is shown in table 1.

All patients have improved and one has been treated for only one month. Three patients showed such rapid improvement that it was impossible to persuade the relatives to let them remain longer, and two were taken out against advice a short time after admission, but most patients who have been dismissed early have continued theelin at home under medical supervision. Follow-up letters have been received at intervals in the majority of cases for from three to six months after dismissal, and only one patient has not continued to

improve and she was taken out against advice and undoubtedly the theelin was not continued. So far there has been only one readmission of this group and this patient remained out of the institution only nineteen days, having had treatment for four months. Since her return she has received six months' additional treatment with theelin and has shown marked improvement.

RESULTS OF THEELIN THERAPY IN SCHIZOPHRENIC PATIENTS DURING THE CLIMACTERIC

It is an established fact that involuntional melancholia complicates other types of psychoses. We have seen institutionalized patients become more disturbed with the advent of hypo-ovarianism and on the administration of theelin they have quieted down. As has been cited in a previous paper,² the stress and strain of the involuntional period evolve dormant potentialities of a schizoid personality into a typical case of schizophrenia, and this period of life has been shown to be the exciting factor in the early production of an organic psychosis.

Theelin therapy has been employed in the treatment of patients in the involuntional period who had definite symptoms of schizophrenia or cerebral sclerosis. The same dosage was employed as with involuntional melancholia, and there have been very few instances in which there has been no noticeable improvement in the mental disturbances. It is believed that in all cases the syndrome of hypo-ovarianism was relieved by the theelin, and in some instances, in which the medication was discontinued or interrupted early in the confusion of transferring the patient to another cottage or ward, the patients have asked for "the shots" to be continued because of the relief they experienced from them.

TABLE 2—Results of Theelin Therapy in Schizophrenic Patients During the Climacteric

Patient	Age	Improvement of Psychosis	Status on Discharge	Time in Months Since Discharge
1 S S	37	Marked	Improved	21
2 M B	44	Marked	Improved	6
3 A Z	44	Marked	Improved	20
4 B Z	42	Marked	Improved	10
5 L H	41	None	Stationary	13
6 L B	46	Marked	In hospital	
7 E P	45	Moderate	In hospital	
8 K N	51	Slight	In hospital	
9 C O	44	Marked	Improved	0
10 L W	42	Slight	In hospital	
11 M W	46	Marked	Improved	6
12 R A	52	Marked	Improved	10
13 M J	43	Slight	In hospital	
14 L S	45	Slight	In hospital	
15 F G	41	Moderate	In hospital	
16 M G	35	Marked	Improved	15
17 E H	45	Moderate	In hospital	
18 M M	41	Slight	In hospital	
19 C H	23	Moderate	Improved	2
20 J P	52	Marked	Improved	8
21 E W	39	Marked	Improved	24
22 E K	45	None	In hospital	

Naturally the length of treatment has varied for a number of reasons, but in those who showed no noticeable remission of their psychotic episode after six months the therapy was discontinued, and it has never been continued longer than one year in a single case.

In table 2 the results of the therapy in twenty-two schizophrenic patients have been tabulated. The average age was 44 years and the means were 52 and 28

years, the latter patient being the only one suffering from artificial menopause (surgical). The ten patients who made social recoveries were hospitalized for an average period of six months.

RESULTS OF THEELIN THERAPY IN CEREBRAL ARTERIOSCLEROSIS IN THE CLIMACTERIC

Table 3 shows the results of treatment in the organic cases, and naturally these are not very impressive, but the tabulations in both the functional and the organic cases do not depict the true state of affairs. Even the two patients in each group who showed no mental improvement became much more comfortable in the hospital, and the majority became so much better adjusted to hospitalization that they could be moved from the wards for disturbed patients to quiet cottages.

Patient 6 in the schizophrenic group is to be paroled soon, and those who have shown moderate improvement in both groups have spent variable periods of time on parole at home, usually from three to four months.

Other psychoses, such as manic-depressive, psychoneurosis and psychosis with other somatic diseases (thyrotoxicosis, cardiorenal disease and the like) with definite symptoms of involutional melancholia, have been aided in a more rapid improvement or recovery as the case may be, by the administration of theelin. Six manic-depressive patients have recovered with an aver-

TABLE 3—Results of Theelin Therapy in Cerebral Arteriosclerosis in the Climacteric

Patient	Age	Improvement of Psychosis	Status on Discharge	Time in Months Since Discharge
1 E P	56	Moderate	In hospital	
2 M S	44	Moderate	Improved	13
3 E S	53	Marked	Improved	7
4 I B	53	None	In hospital	
5 L K	51	Moderate	In hospital	
6 M M	53	None	In hospital	
7 A M	51	Slight	In hospital	
8 E K	60	Moderate	In hospital	
9 M L	55	Moderate	In hospital	
10 A P	48	Marked	Improved	17
11 A C	56	Slight	In hospital	
12 L L	56	Marked	Improved	29
13 L F	50	Marked	Improved	31
14 A B	50	Slight	Stationary	25
15 C S	47	Slight	In hospital	

age hospitalization of four months. Only the patients with cardiorenal disease did not recover and they were moderately improved, but all were relieved of the intense depression and nihilistic trends.

CONCLUSIONS

1 For all practical purposes theelin seems to be specific in involutional melancholia, the apparent recovery rate being 92 per cent in our series of cases.

2 Massive doses of from 30,000 to 40,000 international units for the first month of treatment accelerate the recovery rate in involutional melancholia, the hospitalization being reduced to an average period of three months.

3 Theelin is indicated for any woman during the climacteric having disturbing mental aberrations, whether mild or severe.

4 Theelin therapy is efficacious in relieving distressing symptoms of the climacteric in other types of psychoses, many patients being improved to the extent of recovery.

CONGENITAL OCCLUSION OF THE CHOANA

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Congenital occlusion of the choana is a comparatively rare developmental anomaly, approximately only 160 cases having been reported since 1830. Only six cases have been seen in the Section on Rhinology of the Mayo Clinic since 1907, and in only one of these cases was the occlusion bilateral.

It is surprising to note that all the patients were in fairly good health, inability to breathe properly through the nose apparently not having been a serious handicap to their normal development. There was no history indicating any hereditary tendency toward development of the condition, and there were no other apparent deformities or asymmetries. None of the patients seen at the clinic had any disease of the ears. Removal of the obstruction in each case restored normal function.

EMBRYOLOGY

The olfactory epithelium arises in embryos of about 4 mm as paired ectodermal thickenings, olfactory placodes, on the ventrolateral sides of the head. Specimens 8 mm long (middle of the sixth week) show the margins of each placode elevated about a central pit. Around these olfactory fossae the nose develops. Each first branchial arch forks into a maxillary and mandibular process. Dorsal to the mouth is the fronto-nasal process of the head. Laterally on the maxillary processes and ventral to the mouth are the mandibular processes. With the appearance of the nasal pits the lower part of the frontonasal process necessarily is subdivided on each side into a lateral and a median nasal process.

The nasal depressions are at first grooves, each bounded mesially by the median nasal processes and laterally by the lateral nasal and maxillary processes. These nasal grooves connect temporarily with the oral cavity. As development proceeds, fusion of the maxillary processes with the median nasal processes converts the nasal grooves into blind pits, opening by primitive anterior nares and separated from the mouth by ectodermal plates. Later, the union of the median nasal process which forms the septum with the lateral nasal process reduces the size of the external nares. The epithelial plates, which separate the nasal fossae from the primitive mouth cavity, become thin membranous structures as the nasal cavities extend backward and by rupturing during the seventh week produce the primitive choana. The front part of the plate is invaded by mesoderm, thereby forming the primitive palate, which differentiates into the lip and the premaxillary palate. The nasal fossa now opens externally through the external nares and communicates internally with the mouth through the primitive choana. As the ventral border of the septum fuses with the palate, it separates the two passages completely. The permanent nasal passages thus consist of the original nasal fossae plus a portion of the primitive mouth cavity which has been appropriated secondarily by the development of the palate.

About this time the superior maxillary process, which is an offshoot of the process of the mandibular arch,

From the Division of Otolaryngology and Rhinology, the Mayo Clinic. Read before the Section on Laryngology, Otolaryngology and Rhinology at the Eighty-Eighth Annual Session of the American Medical Association, Atlantic City, N. J., June 11, 1937.

assumes its rôle in the formation of the permanent mouth and nasal cavities. The palatal processes of the maxilla grow medially and slightly forward concurrently with the downward and backward growth of the nasal septum, which is thinned out in the process. The growth of the palatal portion of the maxillary processes continues until they meet in the midline, where they fuse firmly with each other, the vomer posteriorly and the septum anteriorly. This fusion completes the formation of the palate and the floor of the nasal cavities.

If one keeps in mind the fact that the floor of the rudimentary nasal cavities was formed by the premaxilla and that the next stage of growth was by backward displacement of the nasal septum, leaving the floor deficient and in contact with the tongue, it becomes apparent that the primitive choanae are not the same structures as the fully formed choanae.

Normally, the choanae are formed by the body of the sphenoid, medial plates of the pterygoid processes, posterior border of the septum, and fusion of the hard and soft palate. The most popular theory as to the cause of congenital absence of the choana appears to be (1) persistence of the nasobuccal membrane, (2) persistence of the buccopharyngeal membrane and (3) overgrowth of the vertical and horizontal processes of the maxillae. When the atresia is membranous, the probability is that it is caused by persistence of the nasobuccal membrane. When the occlusion is bony, there seems to be some uncertainty as to its origin. The bone forming the obstruction has been shown to be formed from cartilage, which would indicate that it probably was formed from persistence of the buccopharyngeal membrane.

Should primitive choanae dorsal to the primitive palate not form during the process of development, the epithelial lining of the primitive nasal fossa and the epithelial lining of the primitive oral cavity would remain intact, each separated from the other by the thinned-out mesenchymal floor of the early nasal fossae. The continued dorsal growth of the nasal fossae into the mesenchymal mass of the nasofrontal process would ultimately, in cases of maximal growth, lead to a condition in which the epithelium of the nasal fossae would come in contact with the epithelium of the foregut, that is, the nasal portion of the pharynx with a variable amount of mesenchymal tissue between the epithelial surfaces. This would result in blind-ending nasal fossae dorsally. If the amount of mesenchyma between the pharyngeal and the nasal epithelium should remain thick, an osseous atresia would ultimately be formed.

SYMPTOMS

The symptoms of choanal obstruction are quite apparent and consist of inability to breathe through one or both nostrils and the accumulation of thick mucus in the occluded nostril, which can be removed only by wiping or stooping forward. When only one nostril is obstructed, the symptoms are of course much milder. In the new-born there is an inability to nurse, and a tendency to suffocation and cyanosis, especially during the act of swallowing, during sleep and when the mouth is closed, which symptoms can easily be confused with the syndrome caused by enlargement of the thymus.

Several writers have called attention to the fact that congenital occlusion of the choana probably is an unrecognized cause of infant mortality much more often than the literature on the subject would indicate.

In nearly all the cases of choanal occlusion reported patients have survived the first few years of life, so there can be little doubt that if the condition was recognized at birth or during the first few days of life, many more cases would have been reported. In the first case of choanal occlusion to be found in the literature, reported by Otto in 1830, the condition was discovered at necropsy. In Stewart's¹ report of the cases of two sisters with congenital bilateral atresia he called attention to one other member of the family who had died in early infancy probably because the condition was not recognized. A few cases have been reported when the atresia was discovered early and the infant's life saved by relief of the obstruction.

REVIEW OF THE LITERATURE

In 1859 Luschka² reported the case of a 7 year old boy in good health who had bilateral bony occlusion and complete obstruction of both choanae. At birth there had been great difficulty in maintaining his life, he had not been able to nurse and his mouth had to be kept open to permit breathing. He was sent to Carl Emmert for surgical treatment, as the latter had had some previous experience with the condition, having reported a case of choanal occlusion in 1851.

Ronaldson³ in 1880 reported a case of bilateral membranous choanal occlusion which he had encountered in his obstetric practice. After delivery he noted that, on attempting to inspire, the child's lungs were not inflated, when the child was held up, however, the mouth was opened and free respiration took place. After removing a mucous plug on each side, he discovered a dense membrane completely closing the choanae, unfortunately he delayed operation and the child died an hour later. He stated in his discussion that breaking down of the membranes should not be delayed, and he suggested the alternative of a gag, to prevent closure of the mouth, or tracheotomy.

Hubbell⁴ in 1886 reviewed all published reports of cases up to that time, totaling seventeen in all. Of these, occlusion was complete in both nostrils in eight cases, complete in the right nostril in four, and complete in the left nostril in three, occlusion was incomplete in both nostrils in one case and in the left nostril in one case. The occlusion was bony in twelve cases, membranous in five. Hubbell found the first case reported, which has been mentioned previously, to be that reported by Adolph Wilhelm Otto of Breslau in 1830, and he stated that Otto had implied that other such cases had been seen previously. According to Hubbell's review, Carl Emmert was the first to report a case in which operation was performed for relief of the condition. Hubbell reported a case of his own, in which the patient was operated on with a hand drill, 13 mm in diameter, and obtained complete relief, the opening later contracted, however, making a secondary operation necessary, at which time tubes were placed in the nose and left for seven weeks, with eventual complete and permanent relief. Hubbell did not mention any deformity of the hard palate but called attention to the fact that there had never been any disturbance in hearing and that the eustachian tubes, tympanic cavities and tympanic membranes were normal in all.

1 Stewart J P. Congenital Atresia of the Posterior Nares. *Arch Otolaryng* 13: 570-583 (April) 1931.

2 Luschka H. Ueber angeborene Atresie der Choanen. *Arch f path Anat* 18: 168-170 1860.

3 Ronaldson T R. Note on a Case of Congenital Closure of the Posterior Nares. *Edinburgh M J* 26: 1035 1880 1881.

4 Hubbell A A. Congenital Occlusion of the Posterior Nare. *Tr New York M A* 3: 244-256 1886.

respects although the conditions of Toynbee's experiment were constantly present

In explanation of this phenomenon, I would suggest that in the case of an individual with congenital occlusion the act of swallowing must be done without the aid of nasal respiration, and that it is therefore through necessity and early training accomplished in somewhat modified form from the normal, whereas in Toynbee's experiment the nostrils and mouth are tightly closed during the act of swallowing

Clark⁵ called attention to the fact that, owing to the rarity of congenital choanal occlusion, it might not be of much practical interest to the physician but that there was no doubt that infants might die from want of knowledge on the part of the family doctor, obstetrician or pediatrician of the possibility of the existence of such an abnormality. Clark could find in the literature only three cases of complete choanal occlusion from 1886, the date of Hubbell's article reporting seventeen cases, up to 1897, he added one of his own, making twenty-one in all. He did not include any cases in which there was only partial occlusion in one or both nostrils but referred only to complete bilateral occlusion. Operation in his case was by means of an electric trephine, making an opening 11 by 13 mm in each nostril. The results ten years after operation were good.

Fraser⁶ in 1910 reported one case in which he was able to secure a specimen at postmortem examination. The patient had died from meningitis secondary to chronic otitis media in the left ear. The right choana was occluded. The right drum was normal and there had been normal hearing on the right side. The nasal septum was deviated to the right. The sinuses were clear. Fraser's specimen revealed that the two antrums were of some size, and he called attention to the fact that this was against the theory of Freis that development of the nasal accessory sinuses results from the presence of air currents in the nose. Fraser stated: "On microscopic examination the nasal mucosa of the left olfactory region showed normal appearance, whereas that of the right olfactory region showed almost complete desquamation of the surface epithelium and fibrous thickening of the submucous tissue. There was also on the right side considerable small cell infiltration especially of the deeper layers of the submucosa. The mucous membrane of both maxillary antrums was normal." In a review of the literature Fraser found a report of 115 cases of choanal occlusion, but some of these cases were not sufficiently described. Out of the 108 cases that were described, in forty the occlusion was bilateral, in thirty-six on the right side, and in thirty-two on the left side. The occlusion was bony in eighty-nine cases, membranous in ten. In nine cases the type of obstruction was not stated.

In many cases of choanal atresia there are changes in the middle ear. In Fraser's case, for example, the ear on the obstructed side was normal, whereas that on the other side was the seat of chronic otitis media.

White⁷ stated in 1919 that the main difficulty in operations for bony occlusion of the posterior nares has been that of obtaining a permanent opening. He reported two cases, one of a man, aged 50, with obstruction on the right side, the other of a girl, aged 18 years,

with bilateral bony occlusion but normal drum membranes. He stated that approximately 150 cases had been reported up to 1919.

In 1921 Kirby⁸ reported two cases of choanal occlusion, in one of which he made the diagnosis while examining the nose with a probe. Submucous resection was performed first and the bony obstruction was then removed through this route. After removal of the obstruction Kirby made a flap from the membrane at the base of the pharyngeal side of the choana, thus covering a portion of the operative surface. Rubber tubes were placed to maintain the opening. He noted that the ear drum was retracted and that there was also a band of tissue covering the orifice of the eustachian tube. A test of hearing revealed catarrhal deafness, the degree of which was not stated. No mention was made of the condition of the hearing in the second case, the same surgical procedure being instituted as in the first case.

Out of 27,863 patients with diseases of the nose and paranasal sinuses who registered in the ear, nose and throat department of the Royal Infirmary of Edinburgh, under A. Logan Turner and J. S. Fraser, only six cases of unilateral atresia of the choana were found. These were reported by Stewart⁹ in 1931 in connection with two cases of complete bilateral atresia which came to his attention at the Deaconess Hospital. Both patients, who were sisters, were operated on with good results. One brother had died in infancy apparently from unrecognized bilateral complete choanal obstruction. Stewart called attention to the fact that growth of the palatal processes of the maxilla medialis is apparently not influenced by either the breaking down or retention of the nasobuccal membrane. Cleft palate results when the nasobuccal membrane does break down. Apparently no atresia of the choana results when the hard palate does not consist entirely of bone. Stewart believed that more cases would be found if infants thus afflicted lived beyond the first day or two of life.

Roth and Geiger¹⁰ in 1926 reported one case of bony occlusion of the right choana.

Grove¹¹ reported one case of complete bony occlusion on the right side. The obstructing tissue was punctured with a chisel and the edges were bitten away with a sphenoid rongeur until the opening measured 1 cm by 1.5 cm. A rubber tube was left in place for five days and was then changed at intervals of three or four days thereafter for two weeks. The ultimate result was very good.

Stinson¹² reported two cases in 1932, one of bilateral and one of unilateral atresia. In one of his cases there was marked asymmetry of the face, with encroachment of the lateral wall of the nasopharynx on the choana. At operation, part of the vomer was removed with the choanal obstruction, thus draining the right nostril into the left side. There was no difficulty with healing.

Culver¹³ reviewed one case in which the patient was operated on in 1918 at the age of 2 years and 8 months. The case was reported at the American Laryngological,

8 Kirby J. C. Cases of Postnatal Choanae Malformation by Bony Occlusion. *Laryngoscope* 31: 701-703 (Sept.) 1921.

9 Roth J. H. and Geiger C. W. Congenital Osseous Occlusion of the Posterior Choanae. Report of Case. *Ann. Otol. Rhin. & Laryng.* 35: 849-855 (Sept.) 1926.

10 Grove R. C. Congenital Atresia of the Right Posterior Nares. *Virginia M. Month.* 60: 682-684 (Feb.) 1934.

11 Stinson W. D. Osseous Atresia of the Posterior Choanae. *Arch. Otolaryng.* 15: 101-103 (Jan.) 1932.

12 Culver B. N. Congenital Choanal Atresia. Two Cases of Complete Bilateral Obstruction. Read before the Western Section of the American Laryngological, Rhinological and Otolaryngological Society. Jan. 31, 1937.

5 Clark J. P. Complete Congenital Occlusion of the Posterior Nares. Report of a Case. *Boston M. J.* 138: 171-174 (Feb. 2-) 1898.

6 Fraser J. S. Congenital Atresia of the Choanae. *Brit. M. J.* 2: 1698-1701 (Nov. 26) 1910.

7 White L. E. An Operation for Bony Occlusion of the Posterior Nares. *Boston M. J.* 150: 153-159 (Feb. 6) 1919.

Rhinological and Otological Society in 1920. A portion of the posterior edge of the septum was removed along with the obstruction in the choanae. The obstruction had been noted at birth, but nothing was done to correct it until the child was past $2\frac{1}{2}$ years old. At the age of 21 the patient was breathing normally but had not developed normally, either physically or mentally.

Culver¹² added another case, of an infant 6 days old, seen in 1934. The patient was suffering from typical cyclic dyspnea, was unable to nurse, and had to be fed with a medicine dropper. The diagnosis was made by air pressure from a rubber bulb and by introduction of a guarded applicator. Nineteen days after birth an operation was performed to relieve the obstruction. A flap of mucous membrane was turned back laterally and a portion of the mucous membrane on the septum was retracted forward. A protector was placed in the nasopharynx. With a small Alexander mastoid gouge the bony obstruction was perforated and reamed out to normal size. A small portion of the septum was removed. Rubber tubes were placed in the nose, extended through the choanae and left in place several days.

REPORT OF CASES

CASE 1—A man, aged 35, came to the clinic with the history of never having been able to breathe through the left side of his nose. Examination revealed a wide deflection of the septum to the left with a great deal of mucus back of this deflection. Jan 19, 1920, with the patient under local anesthesia, submucous resection was performed. When the deflection was removed it was discovered that there was a complete bony occlusion of the choana on the left side. This was removed from between the septal membranes, and the membranes over the posterior nares were cut away with forceps. A pack was placed in the left side and brought out through the right side. There was complete relief of symptoms and the patient has remained well since.

CASE 2—A boy, aged 14 months, was brought to the clinic because of inability to breathe through his left nostril. Examination revealed that the left side of his nose was filled with mucus, the membranes were boggy and dark gray. The adenoid pad and the occluding membrane had been removed previously elsewhere. The patient was operated on again at the clinic Oct 21, 1930, the membranous occlusion being completely removed with biting forceps. He was completely relieved and has remained well since.

CASE 3—A girl, aged 11 years, was unable to breathe through her nose. She had undergone adenoidectomy when only 11 months old and was operated on again for the same condition at the age of 3 years. Four years later tonsillectomy and adenoidectomy were performed, but without relief. The patient was subsequently treated for sinus infection, and attending physicians at that time stated that she had a bony growth in her nose. Examination at the clinic revealed membrano-osseous occlusion of both choanae, with a small opening on each side near the top. June 8, 1927, with the patient under oil ether anesthesia, the obstruction was removed by means of chisel, forceps and bur. A large catheter was placed on each side and left in place for about ten days. The result was very good, the patient having had no trouble since.

CASE 4—A boy, aged 14 years, complained of inability to breathe through the right side of his nose. On examination the anterior end of the right inferior turbinate was found to be very large. Aug 18, 1930 with the patient under local anesthesia, the enlargement of the turbinate was removed. The nostril was found to be filled with mucus and, when this was removed, complete bony occlusion was discovered. There was also a large bony spur into the nostril from the sphenoid. The spur and bony occlusion were removed with a chisel. A specimen of the bony occlusion measured about 5 mm in thickness. The patient has had no trouble with his breathing since that time.

CASE 5—A boy, aged 8 years, was brought to the clinic with the history of having been unable to breathe through his nose since birth. The physician in attendance at birth stated that he had opened the choana during the first week of life but the obstruction reformed. The patient's general health was good. July 17, 1935 with the patient under intratracheal gas anesthesia, the tonsils and adenoids were removed and the obstructing membrane was removed at the same time with biting forceps. A large tube was placed in the nose. Recovery was complete and permanent.

CASE 6—A woman, aged 33, came to the clinic stating that since birth she had been unable to breathe through the right side of her nose. At the age of 14 years, turbinectomy had been performed without relief. On examination at the clinic the right nostril was found to be filled with thick mucus. The membranes were congested and dark gray, and appeared to be inactive and boggy. Owing to previous removal of the turbinate, a clear view of the posterior end of the nostril was obtained after removal of the accumulated mucus and it was apparent at once that there was complete occlusion of the choana. A probe revealed dense bone throughout. May 28, 1936, with the patient under intratracheal gas anesthesia, the thick bony obstruction was perforated with a trephine. Through this opening a modified Kerrison punch was passed and the edges were taken down until all were on a level with the surrounding structures, after which all roughness of the edges was smoothed off with a fine rasp. No packing or tubes were used. After four days the nostril was cleaned daily with a suction cannula over a period of one week. The patient was dismissed on the tenth day and has reported recently that she has had no trouble since dismissal.

SUMMARY

While congenital obstruction of the choana is a rare condition, it appears that more cases would be found if the condition were recognized more often in infants with nasal obstruction, particularly when the nostrils are filled with glairy mucus. The symptoms of choanal occlusion may be confused with those resulting from an enlarged thymus.

It is interesting to note that an individual may grow to full maturity in relatively good health without a nose or with only half a nose, respiratory function being taken over by the mouth. While some patients with atresia of the choana have some ear trouble, a much larger number have no symptoms referable to the ears. In one case of unilateral obstruction which came to necropsy the paranasal sinuses were found to be equally well developed on the two sides. It is relatively infrequent to find other developmental anomalies in cases of choanal atresia. There is some speech defect in nearly all cases, particularly when both sides are occluded. When the speech defect persists after relief of the nasal obstruction, it is probably due to habits of speech formed early in life.

New¹³ has stated that when cleft palates are repaired before the child learns to talk there is usually no speech defect, whereas if they are repaired after the habits of speech are formed there is great difficulty in overcoming such speech defects. It would seem reasonable to assume that this applies as well to speech defects resulting from congenital occlusion of the choana.

In cases in which there is obstruction to breathing through one or both nostrils and a considerable amount of thick mucus is present, one should suspect occlusion of the choana. The obstruction can be permanently relieved by surgical means. Various surgical procedures are described, but the type of operation used should be determined by the needs of the particular case under consideration.

ABSTRACTS OF DISCUSSION

DR J P SCHAEFFER, Philadelphia I have been requested to speak on the embryology of this defect. What especially concerns us in the present connection is the congenital atresia of the choanae in otherwise essentially normal oral, nasal and pharyngeal cavities, albeit that atresia of the choanae may be accompanied by other facial defects and arrests. These atresias are amenable to treatment resulting in the establishment of normal or, at least, satisfactory function. Although there may be other ontogenic and developmental factors underlying this type of atresia of the choanae, my studies both of the defect and of the embryology of the nose and palate lead me to believe that the explanation of the anomalous anatomy under consideration is found in (a) the abnormal behavior of the bucco-nasal membranes and the primitive choanae, (b) an inadequate absorption of the floor of the secondary nasal fossae dorsal to the position of the primitive choanae, and (c) the degree of dorsal growth of the secondary nasal fossae. At an early time in the human embryo the nasal fossae are two blindly ending, epithelially lined pouches lodged in the mesenchymal tissue over the primitive oral cavity. The growth of the nasal sacs normally results in a thinning of the floor of the early nasal fossae, so that ultimately the nasal epithelium and the oral epithelium abut dorsad to what later becomes the intermaxillary bone, thus establishing the thin bucconasal membranes. The latter rupture about the thirty-sixth day of embryonic life. This results in the formation of the primitive choanae, the communicating apertures between the primitive nasal fossae and the primitive mouth cavity. Normally the early primary nasal pits expand dorsad over the roof of the mouth behind the primitive choanae, and at the same time there begins an absorption from before back of the floor of the secondary nasal fossae. Concurrently with these changes the palatal shelves of the maxillary processes begin to appear, first directed vertically and extended toward the mouth cavity, later becoming rotated from the vertical and sagittal plane to a horizontal plane. Following this initial stage, the palatal shelves grow medially and fuse over the tongue in the midsagittal plane. Important in this connection is the fact that the rotation, growth and fusion of the palatal shelves separate the oral cavity from the secondary nasal fossae, and in doing so a goodly portion of the oral cavity is carried to the side of and incorporated with the hindmost portions of the nasal fossae. The expansion of the primitive nasal fossae dorsad into the mesenchyme, the establishment of the primitive choanae by the rupture of the bucconasal membranes, the growth, rotation and fusion of the palatal shelves, and the inclusion on the nasal side of a portion of the mouth cavity lead to an elongation of the nasal fossae anteroposteriorly and the establishment of the definitive choanae at the juncture between the now elongated nasal fossae and the nasal portion of the pharynx.

DR HARRY P SCHENCK, Philadelphia No one sees many of these patients. The only one I was concerned with, an infant of 6 months, had unilateral choanal obstruction and atresia of the external auditory canal on that side. The choanal obstruction was satisfactorily correlated but the atresia of the external auditory canal was not, although roentgenograms showed apparently normal ossicles in the middle ear. The most important feature of Dr Anderson's presentation is the attempt to bring to the attention of obstetricians and pediatricians the fact that immediate treatment of complete bilateral occlusion of the choanae in the new-born is a life saving measure. It is of some interest that of six patients in Dr Anderson's series four were males and two females. Fraser and Kahler stated that females were especially affected. Statistics in these rare conditions are always dangerous. It appears from this series that study of a sufficient number of cases will reveal that sex is not a factor in the incidence. I was interested in Dr Schaeffer's stating that heredity was not a factor and I am certain that he is correct. I have always been influenced by Lang's report of five members of a single family who had unilateral occlusion of the choana and in each instance the occlusion was on the same side. Satisfactory results followed Dr Anderson's operative intervention in every case. Unfortunately, this is not always the case. The membranous obstructions probably cause more difficulty than the bony ones. It seems that cauterization is useful if followed by dilation with

rubber bougies. In the bony obstructions the excision cannot be too widely made. An attempt is made to render the caliber that of the nasal fossa, because the thing that is feared is postoperative cicatrization. If epidermization does not follow promptly, this is a serious factor to contend with.

DR R C GROVE, New York Dr Anderson has rendered otolaryngologists a service in presenting so clearly the subject of congenital atresia of the choanae. One is apt to think too little about embryology in routine clinical work. The portion of his paper dealing with the embryologic development of the nose is instructive. The important question to decide is: Are we failing to diagnose this condition as often as it occurs? Dr Anderson has wisely suggested that some of the deaths in the first few hours or days after birth may be due to bilateral choanal atresia. We all know that removing the adenoids in every child with difficulty in breathing through the nose without a proper nasal examination is to be condemned. I believe that a cotton-tipped probe can be passed through each nostril without causing much distress to the patient. All older children and adults should be examined with the nasopharyngoscope. Dr Anderson's paper impressed me with the number of cases in which submucous resection, trimming of the turbinates and even removal of tonsils and adenoids was done without diagnosis of the atresia until the time of operation or later. Possibly because of its infrequency one does not think of it. Dr Anderson reports six cases at the Mayo Clinic in thirty years, and Logan Turner six cases in the Royal Infirmary of Edinburgh in twenty years. I have seen two cases during the past ten years. Both of these were seen in my allergic work, a point which I would emphasize as the patients complained of sneezing and of a mucous discharge from the affected nostril. Both were young girls in their twenties and the interesting feature in the first case was that she had never noticed that she did not breathe through the one nostril. She had had her tonsils removed in one clinic and a second check up in another without the condition being diagnosed. Both patients had perfectly normal hearing on the side of the atresia, which makes one wonder about the necessity of submucous resection in so many cases of deafness. Treatment in most cases of choanal atresia is simple, as Dr Anderson has pointed out. I think the important and necessary procedure is to make a sufficiently large operative opening and to maintain the patency of the operative area during the first few weeks of convalescence.

DR GORDON B NEW, Rochester, Minn. I might say a word about these children particularly the ones that die shortly after birth. Death is due to the fact that they have trouble breathing on account of their tongue sucking back against the pharynx, resulting from the complete obstruction of the nose. In two cases I have been able to pass a catheter into the hypopharynx just back of the tongue holding the tongue forward and thus giving an airway. Immediately one will find that these children who were unable to breathe and unable to eat except with difficulty, are able to breathe quietly by means of the airway. In both these cases I replaced this catheter with a piece of curved celluloid about the size of a slate pencil with a cross piece at the mesial end, which was outside the mouth and was attached to the cheeks with silk and adhesive plaster. The child wore this piece of celluloid all the time and was able to sleep normally, to take the feeding bottle with this apparatus in place, and it really gave the child no inconvenience. Later, as the child got older, it was possible to remove this celluloid piece permanently.

DR C M ANDERSON, Rochester, Minn. I should like to call attention again to the fact that congenital occlusion may in some instances be a cause of infant mortality when it is bilateral. There may be some speech defect, and there usually is if the child learns to talk before the obstruction is corrected. Dr New has stated in relation to cleft palates that, if the operation is performed and the defect corrected before the child learns to speak there is usually no speech defect. I believe that the speech defect in these cases is due to inability to breathe through the nose. Operations in these cases should be suited to the individual. I do not believe there is any set rule for operation. All of the six operations performed at The Mayo Clinic were in some respect different.

TRYPARSAMIDE THERAPY OF NEURO-
SYPHILIS AND ATROPHY OF
THE OPTIC NERVE

LEO L. MAYER, MD

CHICAGO

It has been fifteen years since the first injection of tryparsamide was given for syphilis of the central nervous system¹. The frequency of involvement of the optic nerve in neurosyphilis prompted an early report on the visual disturbances produced by tryparsamide². It seems fitting at this time to reconsider and reflect on the conclusions of these early reports by means of a study covering a ten year period, during which time a relatively large and varied group of patients were observed as to the end results obtained. Three clinics in the Chicago area were chosen for this report: the Mandel Clinic of the Michael Reese Hospital, the Eye Clinic of the Northwestern University Medical School and the Syphilis Department of the Public Health Institute. An attempt was made to review the progress of every patient treated with tryparsamide after it became available. For the past seven years I myself have been seeing such patients in each of these institutions. Obviously, not all patients were active in the clinics in June 1936, the limit of the time for the check-up used in this report, and in addition certain patients could not be traced, others had died and some had left the vicinity. Figures as to these difficulties will be given later.

Five years ago Dr R. D. Smith and I presented a report on eighty-seven patients receiving tryparsamide treatment for neurosyphilis at the Public Health Institute³. Although many new patients have been treated with tryparsamide at this clinic since our report, only those seen five years ago are included here. A recheck could be made on only fifty-one, or about 60 per cent of the eighty-seven patients. Ten patients would not return in spite of numerous letters stating the nature of the free examination, thirteen had given fictitious names or addresses, two could not be located, two were duplicates, four were known to have died and five were being seen by private physicians from whom we were able to obtain a record. In the five groups, twenty-one of the thirty-four patients with asymptomatic neurosyphilis were reexamined, two of the four with meningovascular syphilis, eleven of the twenty with tabes dorsalis not having optic atrophy, seven of the twelve with dementia paralytica and ten of the fourteen with optic atrophy. The five groups had 4,297 injections of tryparsamide, totaling 11,075 Gm of the drug.

At the Northwestern University clinics seventy-one patients were registered as having been under treatment with tryparsamide. Of these only sixty-one, or 85 per cent could be traced. It is indeed disconcerting that all the patients reported by Lazar⁴ except the three

most interesting returned for examination. One of the three patients found by Lazar to have had acute blindness following an injection of tryparsamide was known to be dead, but no autopsy had been made. The patients were divided into four groups, with a record of 1,550 injections, totaling 3,151 Gm of tryparsamide.

The patients attending the Michael Reese clinic were divided into only three groups. Of the twenty-eight having records of tryparsamide therapy only twenty-six, or 93 per cent, had been observed up to the present. Injections to the number of 370, involving the use of 374 Gm of tryparsamide, were given to these patients.

The total number of injections given in all three clinics was 6,217, with the use of 14,600 Gm of tryparsamide.

The regular procedure in the administration of tryparsamide differed somewhat in each of the three clinics.

At the Michael Reese Hospital the patient was sent to the Eye Clinic for study of the visual acuity, the visual fields and the fundi before the series of injections was begun. Patients with optic atrophy were rejected for tryparsamide treatment. Weekly doses of 1 Gm were injected, and if there were no subjective complaints by the patient, who had not been informed of the possibility of optic complications, the patient was not returned to the Eye Clinic until a new series was to start. It is pertinent that visits of patients to the Eye Clinic were not numerous.

In the Eye Clinic of Northwestern University Medical School visual fields, visual acuity and fundi were studied before each injection up to and including the tenth. Subsequent examinations were done on visual complaint of the patient or on my request in order to compare ordinary fields with the flash fields⁵. No patient with defects in the fields or known optic atrophy was accepted by the Skin Department for treatment with tryparsamide. If ocular symptoms occurred injection of the drug was delayed until all symptoms disappeared and reactions were normal.

The Public Health Institute has a resident ophthalmologist, Dr Justin J. Korwin, who reported on the visual fields, visual acuity and fundi of all patients prior to their receiving tryparsamide. The patient was told of the possibility of ocular complications, and because of this suggestion many examinations of the eyes were requested. How vivid an impression the suggestion made was shown by the fact that frequently when the dose was increased from, for example, 2 to 3 Gm the patient, seeing this recorded, might have symptoms. At times a sterile hypodermic was given and 3 Gm recorded. In almost every instance the patient had ocular complaints. After the tenth injection no routine examinations were done except when ocular symptoms were noted. Consultation with the syphilologist, Dr Jarold Kemp, was accorded every patient with optic atrophy before the indicated use of tryparsamide was decided on. Treatment of all patients having symptoms referable to the eyes was discontinued until reactions were normal and symptoms had disappeared, when the course was resumed.

RESULTS

The patients at the Michael Reese Hospital were divided into three groups. (1) eleven patients with

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2. Woods, A. C. and Moore, J. E. Visual Disturbances Produced by Tryparsamide. *J. A. M. A.* 82: 2105 (June 28) 1924.

3. Mayer, L. L. and Smith, R. D. Ocular Manifestations in Tryparsamide Treatment of Syphilis. *Illinois M. J.* 65: 258 (March) 1934.

4. Lazar, N. K. Effect of Tryparsamide on the Eye. Experimental and Clinical Study and Report of Case. *Arch. Ophth.* 11: 240 (Feb.) 1934.

5. Mayer, L. L. Visual Fields with Minimal Light Stimulus. *Arch. Ophth.* 9: 353 (May) 1933. Perimetry with Stimuli of Minimal Duration. *Soc. Exper. Biol. & Med.* 32: 219 (Oct.) 1934. Light Stimuli of Minimal Measured Duration as a Means of Perimetry. *Arch. Ophth.* 14: 541 (Oct.) 1935. The Evolution of Flash Perimetry. *Am. J. Ophth.* 20: 829 (Aug.) 1937.

asymptomatic neurosyphilis, (2) twelve patients with tabes dorsalis and (3) five patients with dementia paralytica

Of the patients with asymptomatic neurosyphilis, only one showed a change in visual acuity—an increase from 20/30 to 20/20. All fields remained normal.

In the patients with tabes dorsalis, visual acuity was changed in nine eyes. One patient showed a decrease from 20/20 to 20/30 in the vision of the left eye. The other eight eyes showed an increase in vision, namely, from 20/30 to 20/20, from 20/50 to 20/30, from 10/200 to 20/200, from 20/30 to 20/20, from 20/30 to 20/20, from 20/20 to 20/15, from 20/35 to 20/20. There was no change in visual fields in any of these patients.

Of the patients with dementia paralytica, only one showed a change in visual acuity. This was an increase in the vision of the right eye from 20/200 to 20/40 and in the vision of the left eye from 20/400 to 20/30. No changes in the visual fields were noted in any of these patients.

It is evident that the entire group from the Michael Reese Hospital, receiving doses varying from as little

In the group with meningovascular syphilis, changes in visual acuity were recorded for sixteen eyes. Five eyes showed a decrease in vision. One patient showed a decrease from 20/25 to 20/50 in each eye, but this was questioned because of the patient's mental status, another, a decrease from 20/30 to 20/15 in each eye, and the third, a decrease from 20/15 to 20/20 in one eye. Eleven eyes showed an increase in vision, namely, from 20/25 to 20/15, from 20/20 to 20/15, from 20/15 to 20/13 for each eye, from 20/25 to 20/16, from 20/25 to 20/20, from 20/30 to 20/20 for each eye, from 20/25 to 20/20 and from 20/50 to 20/20 for one eye and from 20/40 to 20/20 for the other. In only one patient was there a questionable change in visual field, but because of mental changes no ocular field could be taken. Subjective reactions were observed five times in four patients, but no permanent changes were noted in the optic nerve.

In the group with dementia paralytica, changes in visual acuity were recorded for thirteen eyes. Six eyes showed decrease in vision, namely, from 20/15 to 20/20, from 20/15 to 20/25, from 20/50 to 20/70, from 20/30 to 20/70, from 20/20 to perception of light

Group with Optic Atrophy (Public Health Institute)

Patient	Present Age	First Visual Record			Fields	Last Visual Record	Fields	First Injection of Tryparsamide		Dose	Reaction
	(1936)					(1936)			Number		
1	60	1930	20/20	20/20	Normal	20/20 20/20	Normal	1930 (2)	91	204	None
2	55	1930	20/50	20/40	50 temporal	20 20 20/50	50 temporal	1930 (2)	53	96	None
3	54	1927	20/200	20/100	Normal	20/20 20/20	Normal	1927 (2)	179	435	None
4	59	1931	20/30	P L *	Right normal left 0	20/30 P L	Right normal left 0	1931 (1)	47	60	None
5	52	1929	20/40	20/20	60	20/20 20/20	Normal	1929 (2)	88	181	None
6	61	1926	20/30	20/30	60	20/20 20/20	Normal	1927 (3)	87	221	None
7	62	1931	20/20	20/20	Normal	20/20 20/20	Normal	1931 (2)	56	118	None
8	55	1929	20/30	20/30	Normal	20/20 20/20	Normal	1930 (1)	58	110	None
9	61	1926	P L	20/20	Right contracted left normal	P L 20/20	Right contracted left normal	1927 (3)	76	157	Subjective
10	49	1933	10/200	20/30	50	P L 20/30	Right 20 left normal	1933 (2)	55	106	Subjective

* Perception of light

as 3 Gm to as much as 30 Gm, with the injection of only 1 Gm at a time in the majority of cases, cannot be a criterion for patients getting larger doses and a greater number of injections. However, the evidence that no reactions were noted and no visual fields changed and that in only one case was there a slight lowering of visual acuity while in eleven eyes vision was enhanced certainly make it appear that tryparsamide caused little or no toxic effects.

The patients treated at Northwestern University were grouped as follows: (1) twenty-eight patients with asymptomatic neurosyphilis, (2) nineteen patients with meningovascular syphilis, (3) fifteen patients with dementia paralytica and (4) eighteen patients with tabes dorsalis.

In the group with asymptomatic neurosyphilis, a change in visual acuity was recorded for thirteen eyes. Four eyes showed a decrease in vision, namely, from 20/15 to 20/25, from 20/15 to 20/20, from 20/15 to 20/20 and from 20/20 to 20/30. Nine eyes increased in vision, viz, from 20/15 to 20/13, from fingers at 1 foot (30 cm) to 5/200, from 20/40 to 20/25, from 20/20 to 20/13, from 20/25 to 20/20, from 20/20 to 20/15, from 20/20 to 20/15, from 20/20 to 20/15 and from 20/20 to 20/15. In addition there was a change in visual field in one case, from homonymous hemianopia of the left eye to a normal field. One patient had two subjective reactions after injections of 2 Gm of the drug.

and from 20/13 to 20/30. Increase in vision was shown in seven eyes, viz, from 20/15 to 20/13, from 20/15 to 20/12, from 20/15 to 20/13, from 20/20 to 20/13, from 20/15 to 20/13 and from 20/25 to 20/20 for each eye. Changes in visual field were noted in three patients, homonymous hemianopia of the right eye without reaction developed in one, and one patient had the left field reduced from 20 degrees to zero after a 1 Gm dose. Three patients had the field of one eye reduced to 20 degrees after a 1 Gm dose. In addition two other patients had entirely subjective reactions.

Changes in visual acuity were recorded for six eyes of the patients with tabes dorsalis. Two eyes decreased in vision, namely from 20/20 to 20/25 and from 20/13 to 20/15. Four eyes increased in vision, viz, from 20/20 to 20/13, from 20/20 to 20/15, from 20/25 to 20/20 and from 20/30 to 20/25. No changes in visual field were seen in this group, and the only reactions were edema of the lid in one patient and nausea in another.

To summarize the data on the seventy-one patients from the Northwestern University Medical School Clinics in seventeen eyes vision was decreased while in thirty-one visual acuity was enhanced. Three patients with dementia paralytica lost field, one becoming blind while in one patient a hemianopic field returned to normal.

The patients at the Public Health Institute were grouped as follows: (1) twenty-one patients with

asymptomatic syphilis, (2) two patients with meningovascular syphilis, (3) eleven patients with tabes dorsalis without optic atrophy, (4) seven patients with dementia paralytica and (5) ten patients with optic atrophy

In the group with asymptomatic syphilis, six eyes showed changes in vision, the vision in both eyes being enhanced from 20/30 to 20/20 in three cases. No changes in visual field were noted in this group, and only three reactions were recorded, a slight, a moderate and a severe subjective reaction. The least amount of tryparsamide given to a single patient was 112 Gm and the greatest 511 Gm.

The patients with meningovascular syphilis showed no changes in visual acuity or visual field and no reactions. The least amount of the drug given was 65 Gm and the greatest 425 Gm.

In the group with tabes dorsalis without optic atrophy, three eyes showed visual changes, the vision of each improving from 20/30 to 20/20. No changes in visual field were noted in this group and only two reactions, one subjective and the other hysterical. The least amount of tryparsamide given was 11 Gm and the greatest 338 Gm.

In the group with dementia paralytica, only one eye showed a change in vision, and this was an enhancement from 20/30 to 20/20. No changes in visual field were found, and there were no reactions. The least amount of the drug given was 51 Gm and the greatest 443 Gm.

The accompanying table shows the data on the group with optic atrophy, and I should like to call particular attention to it because these were cases of known optic atrophy in which, in spite of the so-called contraindication, the use of tryparsamide was deemed advisable because of the patient's general condition. Eleven eyes showed changes in vision. The vision of two was decreased, from 20/40 to 20/50 and from 10/200 to perception of light, respectively. Nine eyes had an increase in visual acuity, viz, from 20/50 to 20/20, from 20/200 to 20/20, from 20/100 to 20/20, from 20/30 to 20/20, from 20/40 to 20/20 and from 20/30 to 20/20 for both eyes in two cases. Changes in visual field were noted in three cases—from 60 degrees to normal for both eyes in two cases and a decrease from 50 to 20 degrees for the right eye in one case. Subjective reactions were noted on two occasions in this group.

To summarize the data on the groups from the Public Health Institute, consisting of fifty-one patients observed for a ten year period, two eyes lost vision, one becoming blind for all practical purposes, while nineteen showed an improvement of visual acuity. Four eyes had their visual fields increased from 60 degrees to normal, while in one eye there was a diminution from a contracted field of 50 degrees to one of 20 degrees.

COMMENT

Of the entire group of 155 patients, 54 were observed from an ocular point of view for at least five years and a few for as long as ten years. In only two eyes, or 1 per cent, did blindness ensue, while four eyes lost visual field to a degree. It is not my purpose to argue whether these impairments were due to tryparsamide to the neurosyphilis or to both. However it must be admitted that the patients were poor risks for any kind of treatment. In view of the fact that visual

acuity and visual fields were decidedly improved in so many instances, it would seem fair to state that tryparsamide under proper control is less dangerous than at first considered, even if optic atrophy has already become apparent. Moore's⁶ statement that "tryparsamide is absolutely contraindicated in the treatment of the syphilitic optic atrophies," Stokes's⁷ contention that tryparsamide is contraindicated "when disease of the optic nerve is present (not the vascular mechanism)," and the statement of Bluemel and Greig⁸ that tryparsamide is "a form of therapeutic dynamite, notable chiefly for its dangers," do not agree with my experience. On the other hand, many reports, namely, those of Lillie,⁹ Cady and Alvis,¹⁰ Dancy,¹¹ Neff,¹² Roth,¹³ Casten,¹⁴ Lees,¹⁵ Hyder,¹⁶ Wile and Wieder,¹⁷ Lichtenstein,¹⁸ Cormia¹⁹ and others, and, more recently, the experience of Cordes²⁰ and of Fine and Barkan²¹ agree with my results, indicating that "the percentage of danger from tryparsamide is no greater than that from some other preparations providing the proper precautions are used,"²⁰ and that "the proved therapeutic value of tryparsamide, in a disease which is 'a medical emergency' justifies the slight risk."²¹

It is evident that a certain small number of patients with syphilis of the central nervous system have involvement of the optic tracts which may lead to blindness even without specific treatment. It is also acknowledged that an even smaller number of such patients when given tryparsamide may have subjective or objective signs and symptoms of injury to the optic tracts. Whether this minimal degree of danger is due to a direct toxic effect of the drug on the retina or optic nerves, to a particular sensitivity of the patient to the drug, to the toxic effects of the disease on the optic nerve, to arterial spasm caused by the drug or the disease or to the noxious influence of the treatment for syphilis during a period of low blood pressure, as hypothesized by Lauber,²² the low incidence of damage fully justifies the use of tryparsamide with proper observation.

6 Moore J E. The Modern Treatment of Syphilis. Baltimore, Charles C Thomas Publisher 1933, pp 367-368.

7 Stokes J H. Modern Clinical Syphilology. Philadelphia W B Saunders Company 1934 p 1172.

8 Bluemel C S, and Greig W M. The Results Obtained with Tryparsamide in a Group of Fifty Cases of Neurosyphilis. Colorado Med 22:16 (Jan) 1925.

9 Lillie W I. Tryparsamide Treatment of Syphilis of the Central Nervous System. Observations from an Ophthalmologic Standpoint. J A M A 83:809 (Sept 13) 1924.

10 Cady L D and Alvis B L. The Use of Tryparsamide in Patients With and Without Ocular Lesions. J A M A 86:184 (Jan 16) 1926.

11 Dancy A B. Ophthalmoscopic Examination During Treatment with Tryparsamide. J Tennessee M A 18:13 (May) 1925.

12 Neff E E. Effect of Tryparsamide in Optic Tract. Wisconsin M J 24:120 (Aug) 1925.

13 Roth J H. Observations of the Fundus Oculi in Tryparsamide Treatment of General Paralysis of Insane. Illinois M J 18:220 (Sept) 1925. Two Years Observation of the Fundus Oculi in Tryparsamide Treatment of General Paralysis of Insane. ibid 51:242 (March) 1927.

14 Casten Virgil. Tryparsamide Amblyopia Treated by Forced Drainage of the Cerebrospinal Fluid. New England J Med 202:676 (April 3) 1930.

15 Lees David. Observations on the Use of Tryparsamide in the Treatment of Syphilitic Optic Atrophy. Tr Ophth Soc U Kingdom 52:203 1932.

16 Hyder H P. Tryparsamide in Neurosyphilis. M J & Record 121:475 (April 15) 1925.

17 Wile U J and Wieder L M. Tryparsamide in the Treatment of Neurosyphilis. J A M A 84:1710 (June 6) 1925.

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19 Cormia F E. Tryparsamide in Treatment of Syphilis of the Nervous System. Brit J Ven Dis 10:99 (April) 1934.

20 Cordes F C. Ocular Changes from Central Nervous System Syphilis and the Administration of Tryparsamide. Southwestern Med 20:377 (Oct) 1936.

21 Fine Max and Barkan Hans. Prevention of Ocular Complications in Tryparsamide Therapy. Am J Ophth 20:45 (Jan) 1937.

22 Lauber H. Treatment of Atrophy of the Optic Nerve. Arch Ophth 16:555 (Oct) 1936.

CONCLUSIONS

From observation of 155 patients with various types of syphilis of the central nervous system, treated with tryparsamide and under rigid ocular control for a reasonable period of years, the following conclusions may be drawn

1 Subjective reactions are not infrequent but are often due to suggestion

2 Severe objective signs of damage to the optic nerve occur infrequently with reasonable ocular control

3 Of patients treated with tryparsamide, the percentage of those benefiting so far as the optic nerve is concerned is far greater than the percentage of those in whom damage may occur

4 Patients with optic atrophy due to syphilis should have the advantage of the use of tryparsamide when the drug is indicated

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ABSTRACT OF DISCUSSION

DR. FREDERICK C. CORDES, San Francisco. The accounts in the literature have been so varied that there has been a great deal of discussion as to the safety of tryparsamide. This has resulted in a fear of blindness that has done a great deal to deprive many patients with neurosyphilis of one of the most useful of all drugs. There can be no doubt that the use of tryparsamide carries a certain danger comparable to that encountered in the use of any powerful drug, including arsenamine. That the optic pathways are vulnerable at times is also conceded. In just what manner this damage occurs is still unsettled. In considering this problem, two factors should be borne in mind. 1. Certain patients are sensitive to tryparsamide, as they may be to other drugs. 2. At times syphilitic optic atrophy has a tendency to progress rapidly without the use of any specific therapy. It is rather generally conceded that in cases in which there is no damage to the optic tract the risk is very slight, provided one is alert to the early warning of the subjective symptoms or objective signs. When symptoms appear, one must assume that the patient is sensitive to the drug, and in these cases it must be discontinued or used with a great deal of discretion. In the cases of optic atrophy shown in chart 12 there was a decrease in central vision in two patients, and in each instance this was limited to one eye. The visual field changes also are interesting. In only one case was there a decrease in the field of vision in one eye. From this it seems fair to assume that (1) the drug was not responsible for the decrease in vision and field, or both eyes would have been involved, (2) the process was too active or too far advanced to be benefited by the drug. This series of cases coincides with my experience that optic atrophy in itself is no contraindication to the use of tryparsamide provided the case is carefully controlled for evidence of sensitiveness to the drug. It is imperative that all these patients be watched carefully for the symptoms and signs associated with sensitiveness to the drug. I should like to emphasize the necessity of complete examination before the first treatment. There have been two patients who reported with the history of blindness following the use of tryparsamide. On investigation, it was found that there was no record of examinations of visual acuity, fields or fundus before the therapy was instituted. Obviously these cases are of no value in determining the effect of the drug. More large series of carefully controlled and observed cases should be reported so that it will be possible to determine definitely what the contraindications may be to the use of tryparsamide.

DR. WALTER I. LILLIE, Philadelphia. The number of cases presented is large, and the period of treatment is of sufficient duration not only to obtain a good clinical conception of the value of tryparsamide as a therapeutic agent but also to support my contention as well as the contentions of Cady and Alvis,

Dancy, Neff, Rotli, Casten, Lees, Hyder, Wile and Wieder, Lichtenstein, Cormia, Cordes, Fine and Barkan, and others that tryparsamide is not more dangerous from the visual standpoint than other preparations used in the treatment of syphilis of the central nervous system. Proper ocular supervision should be instituted for all cases treated, regardless of the therapeutic agent, as it is a well established fact that syphilis alone may and does cause progressive damage to the optic nerves, with resulting loss of peripheral or central vision, or both. No one has definitely proved that tryparsamide or any other arsenical is neurotropic. The type of field changes occurring before, during or after a proper therapeutic regimen has been instituted are similar to those occurring in untreated syphilis, and as yet no pathognomonic field defect due to tryparsamide has been demonstrated. I believe, as does Mayer, that suggestion may play an important part in the production of subjective symptoms, while the organic changes are best explained by a direct syphilitic process in the optic nerves, namely, a perineuritis. If tryparsamide is of value in arresting active syphilis of the central nervous system it should also be of value in arresting active inflammation of the retina, choroid or optic nerve, and the presence of the latter should be no contraindication to its use. I am sure that ophthalmologists are all agreed that an untreated active syphilitic process of either the central nervous system or the visual apparatus has a very unfavorable prognosis, so that any antisyphilitic therapeutic agent which will arrest or improve the condition should be used regardless of the pathologic condition existing when the therapeutic regimen is instituted. Reliable statistics prove conclusively that in inadequately or untreated syphilis of the central nervous system the occurrence of blindness due to optic atrophy is about 35 per cent. The comparison of this percentage to the reported 2 to 10 per cent of blindness occurring during treatment with tryparsamide suggests that tryparsamide is preventing the development of optic atrophy sufficiently marked to affect the central visual acuity in about 25 per cent of the cases. Dr. Mayer has presented in an orderly and comprehensive manner a sufficient number of cases, thoroughly examined ophthalmologically before, during and after treatment with tryparsamide, to justify the conclusion that this form of treatment, properly supervised by the syphilologist and ophthalmologist, is decreasing the incidence of optic atrophy in all types of syphilis of the central nervous system. My experience, with similar cases parallels that of Dr. Mayer, and I am in accord with his conclusions in every respect.

DR. LEO L. MAYER, Chicago. Dr. Cordes has added some important points which, because of the limited time at my disposal, I was unable to include in this portion of the paper. One of these was the fact that the majority of patients not benefited by tryparsamide were in a precarious state before the drug could be given and thus lost the proper chance for the evaluation of any type of therapy. Another point that Dr. Cordes mentioned which should be stressed is the complete visual examination before any type of antisyphilitic treatment. If the pretherapeutic status is not recorded, the progress and final results obtained have little basis for comparison. The plea of Dr. Cordes for more large series of such syphilitic patients certainly has my endorsement. Dr. Lillie has also emphasized the necessity of proper ocular supervision of neurosyphilitic patients, regardless of the therapeutic agent. I agree with Dr. Lillie. According to my experience no field defect characteristic of a tryparsamide effect has been obtained. It is also important to emphasize the fact that perimetry must be included as an important factor in the treatment of neurosyphilis. I want to add an additional case to this group which Dr. Gifford called to my attention before I left Chicago. A patient had come to the clinic at Northwestern University for tryparsamide treatment and had had fields, fundi, and visual acuity taken. He had then had six injections of tryparsamide without returning to the eye clinic, and when he did return, after this sixth injection, his fields were reduced to 5 degrees of the center in both eyes. The visual acuity was not reduced, as there was no central scotoma. I simply want to add that there was one case in which it seemed that there might have been an ocular effect from the administration of the tryparsamide itself.

IMMUNITY TO SMALLPOX

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In 1936 Bull and Rankin¹ reported the results of vaccination against smallpox in 5,000 college students at Lehigh University, Bethlehem, Pa. From their results they estimate that more than thirty-three out of each thousand American students entering college have never been vaccinated for smallpox and further that seventy-five out of each thousand college students are without adequate protection against smallpox.

In the same year a more extensive survey was reported by Collins². This survey includes studies of the rural, urban and metropolitan general white population of the United States and records data on the history and frequency of vaccination against smallpox in 9,000 families. Collins found that approximately 70 per cent of the adults had a positive history of

vaccination. These three students came from families in which the parents were devout Christian scientists.

The accompanying table gives in tabulated form the detailed histories and results of the vaccinated group. This group of college students included 739 males between the ages of 16 and 31 years inclusive. Of these 739 male students 628, or approximately 85 per cent, were in the age group 17 to 20 years inclusive. Two hundred and ninety-nine of the total group were females between the ages of 16 to 28 years inclusive. Of these 299 female students 270, or approximately 90 per cent, were in the age group 17 to 20 years inclusive. Approximately 80 per cent of the students in this group came from rural areas and small towns in the state of Kansas.

The following data are significant of a particular age group, predominantly 17 to 20 years inclusive, derived very largely from rural areas and the small towns of Kansas. To date no such study has been recorded in this state.

Of this group 192, or 18.4 per cent, gave a negative history of a previous vaccination against smallpox or

Histories and Results of the Vaccinated Group

Race	Sex	Age	Number Vac- cinated	Medical History			Results of Vaccination						Failed to Return
				Nega- tive	Previous Vacci- nation	Small pox	Chicken pox	Nega- tive	Immune	Accel- erated	Pri- mary Take	Sec- ondary Take	
Caucasian	Male	16	4	0	3	0	1	0	2	2	0	0	0
Caucasian	Male	17	113	11	85	6	11	1	45	33	28	4	2
Caucasian	Male	18	297	39	223	12	23	1	119	103	54	18	2
Caucasian	Male	19	149	11	133	0	0	2	53	59	22	9	4
Caucasian	Male	20	80	8	63	1	8	1	23	25	18	7	0
Caucasian	Male	21	48	5	35	5	3	0	14	23	9	2	0
Caucasian	Male	22	22	0	18	3	1	0	6	0	2	5	0
Caucasian	Male	23	12	1	9	0	2	0	3	5	3	1	0
Caucasian	Male	24	7	2	4	1	0	0	3	1	2	1	0
Caucasian	Male	25	5	1	4	0	0	0	0	2	1	2	0
Caucasian	Male	26	7	0	7	0	0	0	2	3	0	2	0
Caucasian	Male	27	1	0	0	0	1	0	0	0	1	0	0
Caucasian	Male	29	2	0	2	0	0	0	0	2	0	0	0
Caucasian	Male	31	1	0	1	0	0	0	0	0	0	1	0
Negro	Male	16	1	0	1	0	0	0	1	0	0	0	0
Negro	Male	20	1	0	1	0	0	0	0	1	0	0	0
Negro	Male	21	1	0	1	0	0	0	1	0	0	0	0
Mongolian	Male	20	1	0	1	0	0	0	0	1	0	0	0
Caucasian	Female	16	2	0	2	0	0	0	0	0	0	2	0
Caucasian	Female	17	69	7	55	2	5	1	20	24	10	4	0
Caucasian	Female	18	129	15	93	1	12	0	55	35	30	9	0
Caucasian	Female	19	40	7	27	0	6	0	10	16	13	1	0
Caucasian	Female	20	31	2	24	2	3	0	12	11	6	2	0
Caucasian	Female	21	14	1	13	0	0	1	6	4	1	2	0
Caucasian	Female	22	7	1	5	1	0	0	5	1	0	1	0
Caucasian	Female	23	3	1	2	0	0	0	1	0	2	0	0
Caucasian	Female	24	1	0	1	0	0	0	1	0	0	0	0
Caucasian	Female	26	1	0	1	0	0	0	1	0	0	0	0
Caucasian	Female	28	2	0	0	1	1	0	0	1	1	0	0
Negro	Female	17	1	0	1	0	0	0	1	0	0	0	0
Negro	Female	18	1	0	1	0	0	0	1	0	0	0	0
Total			1033	115	826	35	77	7	400	362	203	73	8

There were seven patients with negative vaccinations and eight who failed to return for examination leaving 739 males and 299 females or a total of 1,038 with complete record. This group gave histories of previous vaccinations therefore leaving 811 total for previous vaccination. Chickenpox is recorded only in those cases which gave a negative history of previous vaccination and smallpox. A total of ninety-two students stated that they had had chickenpox.

vaccination or had had smallpox at some time. Of this 70 per cent, 65 per cent had been vaccinated. This survey showed that there was a larger percentage of vaccinations in cities than in rural districts.

In September 1936, 1,053 students who were matriculating for the first time at Kansas State College were vaccinated against smallpox. Such vaccination at Kansas State College is not compulsory, but by following the method advocated by Diehl,³ that of vaccinating unless the student offers active resistance, there were only three students of the total group who refused

of smallpox. Eight hundred and eleven, or 78.1 per cent, gave a positive history of previous vaccination against smallpox and had a visible scar. Thirty-five, or 3.5 per cent, had not had a previous vaccination but gave a positive history of smallpox.

Each student was examined on the second, fourth and seventh days and later if indicated following the date of vaccination. The results were recorded according to the following classification: (a) Immune or immediate reaction—the development of a small area of redness with or without the presence of a papule, the height of the reaction being reached within twenty-four to forty-eight hours following vaccination. (b) Primary take—the formation of a papule, vesicle and pustule, the height of the reaction being reached within six to ten days following vaccination. (c) Secondary take

From the Student Health Service, Kansas State College.
1. Bull, R. C. and Rankin, S. L. Smallpox Immunity in 5,000 College Students. *Pub. Health Rep.* 51: 734 (June 5) 1936.
2. Collins, S. D. History and Frequency of Smallpox Vaccinations and Cases in 9,000 Families. *Pub. Health Rep.* 51: 443 (April 7) 1936.
3. Diehl, H. S. Preventive Medicine in the Student Health Service. *J. Prev. Med.* 1: 377 (May) 1927.

same as primary take except that it occurred in an individual with a visible vaccination scar or with pockmarks (d) Accelerated reaction same as primary take except that the reaction was less pronounced, developed more rapidly and disappeared in a much shorter period of time

The following results were obtained from the vaccinations. Four hundred, or 38.5 per cent, had immune or immediate reactions, 362, or 34.9 per cent, had accelerated reactions, 203, or 19.6 per cent, had primary takes, and seventy-three, or 7 per cent, had secondary takes. Only four had systemic reactions of sufficient severity to warrant special medical care. These students made a rapid recovery. The multiple puncture method was employed on the skin site over the insertion of the deltoid muscle in all instances. No dressings or protective shields were used and no secondary infections were encountered. No instance of generalized vaccinia occurred in the group vaccinated.

It may be noted that there are more primary takes recorded than there are students who gave an entirely negative history. We feel that this can be accounted for in the error in the histories of those stating a positive history of smallpox. None of these students had pockmarks and they probably had had chickenpox instead of smallpox.

Apparently the percentage of students with previous vaccination is considerably higher in Pennsylvania than in Kansas. This tends to bear out Collins's observation that vaccination is more frequent in cities than in rural districts. However, the percentage of students with previous vaccination in our study is higher than the percentage found for the general population.

SUMMARY

1 Of the group vaccinated, 26.6 per cent had no protection against smallpox.

2 Thirty-four and nine-tenths per cent (accelerated reactions) had only partial or impaired immunity to smallpox. We feel that it is reasonable to assume that this group is susceptible to smallpox in a milder form and capable of transmitting the disease to non-immune contacts in a more severe form. Therefore, this group represents a potential public health problem.

3 Sixty-one and five-tenths per cent (primary takes, secondary takes and accelerated reactions) were in some degree susceptible to smallpox.

4 Revaccination restores or reinforces protection against the disease and it is an acceptable procedure from the point of view of the students.

5 The only practical method for reaching the students who are without adequate protection is by vaccination of each entering student. Moreover, these students who go out to become leaders in their communities should be educated as to what constitutes adequate protection against smallpox.

Comprehensive Attack on Traffic Noise—Three reports on road transport noise have been issued by a Departmental Committee set up by the Minister of Transport, and the position is that for the first time in Great Britain a comprehensive attack has been made on the problem of road traffic noise. To this end loudness measurements, many thousands in number, have been conducted under widely different working conditions on the over-all noise of some 800 motor vehicles, both new and old, representing all the main types on the roads today.—*Kave G. W. C. Noise and the Nation, Nature* Sept. 18, 1937, p. 490.

Clinical Notes, Suggestions and New Instruments

EFFECTIVE USE OF EPINEPHRINE INHALATIONS IN ANGIONEUROTIC EDEMA

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The pathogenesis of angioneurotic edema is unknown. Ten years ago the chief emphasis was placed on the vasomotor and neurotic background. Since that time, however, the vasomotor and neurotic background has been receiving progressively less consideration, and increasing emphasis has been placed on allergy. Certainly, from the standpoint of successful treatment when an offending substance, food or protein, is shown to be the cause of an angioneurotic edema it should be removed, or there should be attempts made to desensitize the patient. But from the impression gained in reviewing the literature, and from my own experience, attempts to eliminate the offending substance and to desensitize have been largely unsuccessful. Consequently it would seem that this emphasis on the allergic background of angioneurotic edema is of small use from the practical therapeutic point of view. Perhaps the greater emphasis should rest on the older view that angioneurotic edema is a vasomotor neurosis.

If the vasomotor system plays a conspicuous part in angioneurotic edema, one might expect that a drug capable of influencing this system might influence the disease. Epinephrine exerts a marked influence on the vasomotor system and hence from the theoretical standpoint one might expect a beneficial influence on angioneurotic edema. But the practical application of epinephrine therapy in the past has fallen short of the theoretical expectations. This failure has been due to the fact that the method and manner of use of epinephrine have not been understood.

In this paper I call attention to treatment directed toward the vasomotor component in angioneurotic edema by the use of inhalations of epinephrine 1:100 solution as recommended by Graesser and Rowe¹ for bronchial asthma. In the first place, it should be emphasized that the effective time to employ inhalations is before or at the very outset of an attack. A warning sign or symptom will often tell the patient of an approaching attack. Then from two to three inhalations of the epinephrine should be taken at once and repeated every five to fifteen minutes until the warnings disappear and there is no evidence of swelling. For their curative effect and after the threat of the acute attack has faded three inhalations should be taken every two hours during the day and on alternate days over a period of from three to five weeks. If during this period an acute attack threatens the more frequent administration of the inhalations should be resorted to.

By this method excellent clinical results were obtained. After a few inhalations acute attacks were quickly aborted and continued use appeared to exert a curative influence. Even the case of long standing responded well to this treatment. No significant side effects were noted. The following case illustrates the excellent results obtainable from inhalations of epinephrine.

REPORT OF CASE

A single woman, aged 24, a stenographer, well developed but neurotic, had suffered typical attacks of angioneurotic edema of the eyelids for the past ten years. Lately the attacks had been increasing in number and severity. Fits of sneezing and a feeling of tightness in the eyelids always preceded an outbreak. Within half an hour the eyes would become completely buried beneath thick, sausage-like translucent swellings the size of a hen's egg. Vision was impossible. The swellings were pale and slightly itchy. They were always well defined and did not pit on pressure. Within a day or two they disappeared without leaving a trace.

The physical examination revealed nothing otherwise of interest excepting an unstable vasomotor system. Laboratory studies disclosed nothing abnormal. The blood Wassermann

¹ Graesser, J. B. and Rowe, A. H. Inhalation of Epinephrine for Relief of Asthmatic Symptoms. *J. Allergy* 6:415 (July) 1935.

reaction was negative. The urine contained no albumin, sugar or hematoporphyrin. Skin tests and elimination diets showed sensitiveness to a variety of proteins and foods.

The patient without improvement had been subjected to practically all the measures usually recommended for the disease, including a milk and cereal diet, specific desensitization, elimination diets, calcium gluconate, quinine and antipyrine, atropine, bromides and phenobarbital, acid therapy, alkali therapy, peptone desensitization, autohemotherapy, typhoid vaccine, biliary drainage, high voltage roentgen therapy to the cervical roots, and short wave diathermy. During the attacks local applications of cold compresses to the swellings, injections hypodermically of epinephrine, and capsules orally of ephedrine were thought to be of slight benefit.

On examination May 3, 1936, a spell of sneezing started and the patient experienced a feeling of tightness in the eyelids. They started to swell and immediately 1:100 epinephrine solution was inhaled. After the first three inhalations the feeling of tightness disappeared and there was no further increase in the swelling. Three inhalations were taken every fifteen minutes for three hours, and then the interval between inhalations was lengthened to two hours for the remainder of the day. Subsequently three inhalations were taken every two hours on alternate days over a period of five weeks. Since this period of treatment no further inhalations have been necessary. The patient now has suffered no angioneurotic swellings for over a year, whereas prior to this treatment for more than ten years not a single month passed without one or more attacks.

COMMENT

A survey of the literature on the treatment of angioneurotic edema with epinephrine revealed only a small number of reports. Codd² in 1917 reported the cure of a case of angioneurotic edema by the use of epinephrine hypodermically and tablets orally. MacGowan, Longcope and others, cited by Menninger,³ feel that epinephrine may be of occasional benefit. Recently Hughes⁴ reported a case of angioneurotic edema of the throat in which he attributed improvement to epinephrine used hypodermically and as a spray, together with capsules of ephedrine orally. Nevertheless, from the literature and from my own experience the impression was gained that epinephrine as formerly used was of doubtful value in this disease. To be sure, little or no benefit can be expected from the use of epinephrine in the acute case after the swellings have fully developed. The important factor, therefore, in the management of angioneurotic edema, which has received no emphasis in the literature, is the early administration of epinephrine before or at the very earliest development of the swellings.

Although it is stated that these swellings not infrequently develop without warning, most patients will present a sign or symptom before or early in the attack which will permit the use of epinephrine in time to be effective. Numerous preceding or concomitant signs of angioneurotic swellings have been mentioned in medical writings. Hughlett⁵ states that attacks may be preceded by redness, heat, itching or urticaria and that they are almost always accompanied by a feeling of tension in the skin of the affected part. Abdominal pain of a colicky nature is mentioned frequently as preceding or accompanying attacks of angioneurotic edema. Frieboes⁶ calls attention to the fact that for several hours preceding an outbreak the patient may be warned by an internal feeling of nervousness and restlessness. And Oliaro⁷ mentions numerous cerebral symptoms accompanying or preceding an attack of angioneurotic edema such as lassitude, tremors, drowsiness, a numb feeling in the head, dizziness, paresthesias in the extremities and transitory oculomotor paralysis.

The institution of epinephrine inhalation therapy marked a great advance in the treatment of bronchial asthma. The

employment of this treatment shows promise of a comparatively greater advance in the management of the more serious angioneurotic edema. However, it should be mentioned here that a search of the literature disclosed no report in which epinephrine inhalations were employed in the treatment of this disease. Furthermore, although I am aware that angioneurotic edema often appears and disappears without apparent reason, the continued use of the inhalations seems to exert a definite curative influence.

SUMMARY

1 Oral inhalations of epinephrine 1:100 solution have been found effective in preventing the development of angioneurotic swellings.

2 The necessity has been stressed of the early use of epinephrine inhalations before or shortly after the swellings have started.

3 Epinephrine in the fully developed acute case has been found of little benefit in reducing the swellings.

4 Continued use of inhalations of epinephrine in angioneurotic edema appears to exert a curative influence.

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REACTION TO SODIUM MORRHUATE INJECTIONS FOR VARICOSE VEINS AND HYDROCELE

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NEW YORK

Having read of severe general reactions following the injection of sodium morrhuate into a varicose vein in an article by Dr. Maurice L. Dale in *THE JOURNAL* for Feb. 27, 1937, and in an article by Dr. Kenneth M. Lewis in the issue of Oct. 17, 1936, we report our case to emphasize the possible dangers of this form of therapy.

W. J., aged 30, was treated on March 12, 1937, with the injection of 5 cc. of 5 per cent sodium morrhuate (Kirk) into the right leg below the knee. At that time he made no complaint and no reaction was discernible. On March 18 the injection was repeated. The patient's face quickly turned pale and the lips blue. He was advised to recline on the table for about five minutes, after which he said he felt "all right" and outwardly appeared so. We asked him to remain in the waiting room while we turned our attention to another case. After ten minutes he said to the assistant, "I feel very good now, I think I shall go." Arising, he took two steps to the corner of the room to reach for his hat and coat and then suddenly collapsed, his head striking the floor with extreme violence. The pulse was imperceptible, respiration had ceased, the face was cyanotic, the pupils were dilated and the balls of the eyes were rolled upward toward the head and were glassy. To all outward appearance he was dead. He had lost control of the sphincter of the bladder. His clothing was loosened, artificial respiration was instituted and 5 minims (0.3 cc.) of epinephrine was injected into the jugular vein. The injection was repeated in two minutes, and an ampule of coramin was injected subcutaneously. At the end of four minutes the patient gasped and respirations were restored. The pulse was thready and irregular. The sodium morrhuate had been given at twenty minutes to six in the evening. At 6:30 the pulse rate was 60 and the face had changed from blue to a pasty white. The lips were pallid and the eyes still glassy, but the reflexes had returned. At 7 p. m. the pulse rate was 82 and at 8 p. m. 84. The patient was unable to retain whisky, so an ounce of sherry wine (30 cc.) was given. He had previously taken a few sips of coffee. It was impossible to move him from the table for four and one half hours. The mere act of sitting up with aid to receive nourishment, caused fainting. He complained of extremely violent frontal headaches.

The case resembled that of Dr. Lewis's in that bradycardia was present, there was no rash of any kind and there were no bronchial or intestinal spasms. The patient did have a spasm of the muscles of both legs, he said, as high as the saphenous opening, and he described it as a shooting pain in both legs. Because of his condition, he remained overnight and in the morning he was able to return home. His history shows that in 1919 he had urticaria of such severity that it was

² Codd, J. A. Adrenalin in Angioneurotic Edema. *Brit. M. J.* 1, 808 (June 16) 1917.

³ Menninger, W. C. The Treatment of Angioneurotic Edema. *J. M. Soc. New Jersey*, 23: 68 (Feb.) 1926.

⁴ Hughes, D. R. Angioneurotic Edema. *Brit. M. J.* 1, 121 (Jan. 16) 1937.

⁵ Hughlett, W. S. Discussion of Angioneurotic Edema with Report of a Case. *J. Florida M. A.* 1, 1: 623 (June) 1928.

⁶ Frieboes, Walter. *Urtikales umschriebenes Hautodem in Atlas und Lehrbuch der Haut und Geschlechtskrankheiten*. Leipzig: F. C. W. Vogel, 1930, p. 86.

⁷ Oliaro, T. On Cerebral Symptoms in Quincke's Angioneurotic Edema. *Klin. Wchnschr.* 12: 1185 (July 29) 1933.

necessary for him to remain in bed for three weeks. At that time, he said, he received injections because of sensitivity to lamb and to cheese.

In the last year we have given over 2,500 injections for varicose veins, and this is the first such reaction to occur.

We wish to report also a reaction to the same substance which occurred at the giving of the second injection for hydrocele.

The first injection of 1 cc of Searle's sodium morrhuate into the hydrocele sac caused no pain or untoward symptoms of any kind. A week later the patient returned for his second injection, at which time 25 cc of sodium morrhuate was injected into the sac. Within two minutes the patient collapsed and complained of severe intestinal cramps and pain from the kidney region to the groin. Five-tenths cubic centimeter of epinephrine was administered, followed by one-third grain (0.2 Gm) of pantopon (a preparation containing the hydrochlorides of the alkaloids of opium, principally morphine). Three days later the scrotum was enlarged to three times its original size and caused considerable pain. A week later, after application of an ice bag, with elevation of the testicles and rest in bed, the patient was ambulant. He returned to our office, the scrotal sac was punctured and about 6 cc of straw-colored fluid was withdrawn. Three weeks later the scrotum was normal in size and no hydrocele was in evidence. There was no history of allergy.

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UNUSUAL RELATION BETWEEN MENSTRUAL FUNCTION AND ASCITES IN A CASE OF JUVENILE CIRRHOSIS OF THE LIVER

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The following case report is worthy of record for several reasons: first, because ascites was the outstanding symptom at all times; second, because a Talma-Drummond-Morrison operation plus omentopexy was performed in an attempt to reduce the degree of ascites; and as far as we can learn this is the first case of juvenile cirrhosis in which such a procedure was utilized,¹ and third, because there was apparently a remarkable relationship between the degree of ascites and the menstrual function. Observations have been carried out over a period of six years, and while no conclusions have been reached as to the mechanism responsible for the reduction of the ascites coincidently with the establishment of menstrual function, the observations seem in themselves to be sufficiently interesting to warrant inclusion in the literature.

Juvenile portal cirrhosis (Laënnec's atrophic nodular cirrhosis) is a condition rarely encountered. Sutton² in 1930 was able to find in the American literature but twelve proved cases of non-alcoholic atrophic cirrhosis in children. He added the thirteenth.

The patient, a girl of 18, had lived in Czechoslovakia until her eighth year. At the age of 14 she had pneumonia. Puberty had begun when she was 14, but her breasts had remained flat and infantile in appearance and catamenia had never been established. An older sister had not menstruated until her sixteenth year. Both parents, one brother and three sisters were normal and healthy in every respect, and there was no history of hepatic disease in any of the other relatives. In the patient's past history there was no record of alcoholism, unusual diet, exposure to chemicals or infection.

In the fall of 1929, at the age of 16 she began to notice slight enlargement of the lower part of the abdomen. This enlargement increased gradually, but no other symptoms were noted until the fall of 1930, at which time the distention of her abdomen had increased sufficiently to cause dyspnea on exertion. At this time she first consulted a physician. In April 1931, after a brief episode of mild jaundice without pain, she went to the University Hospital at Ann Arbor, Mich. Her outstanding complaints on admission were (1) marked ascites, (2) dyspnea on exertion and (3) amenorrhea and atrophic

breasts. Routine physical examination showed nothing abnormal except distention of the left jugular vein, a greatly distended abdomen with a distinct fluid wave, and a barely palpable liver. Temperature, pulse and respirations were normal throughout fifty-one days of observation. Laboratory tests gave negative results except that they revealed basal metabolic rates of minus eight and minus eighteen. X-ray studies of the sella turcica and the gastro-intestinal tract yielded nothing important. X-ray studies of the chest resulted in a roentgenologic diagnosis of congenital heart disease. On two occasions 4,000 cc of ascitic fluid was removed. Inoculations of guinea pigs with the ascitic fluid did not reveal tuberculosis. The final clinical diagnoses were (1) Pick's disease and (2) portal cirrhosis.

In November 1931 the patient registered at the Mayo Clinic. Paracentesis had been performed once in the meantime to reduce discomfort and dyspnea. Catamenia had not appeared and her only other complaints were dyspnea on exertion and marked enlargement of the abdomen. Except for extreme ascites, physical examination gave essentially negative results, as did routine tests of the blood and urine and serologic tests. No dependent edema or superficial collateral circulation was noted. Her weight at this time was 128 pounds (58 Kg). A test of the liver function with bromsulfalein showed grade 2 dye retention. The serum bilirubin content was 17 mg, and there was a direct van den Bergh reaction. Roentgenograms of the chest revealed a peculiar globular shadow in the mediastinum, which was at first interpreted as being the outline of a congenitally diseased heart. Further study, including fluoroscopic examination, indicated that this shadow was cast by an ovoid mass in the posterior mediastinum, definitely behind the heart. X-ray treatment produced no change in the size of this mass.

By means of ammonium nitrate given orally and salyrgan given intravenously, satisfactory diuresis was obtained. Several pounds of weight were lost, and the ascitic distention was materially reduced. The patient felt definitely more comfortable, and she was allowed to return to her home in Michigan. The clinical diagnoses made were (1) juvenile cirrhosis of the liver, (2) amenorrhea and (3) mediastinal tumor of unknown nature.

She was first seen by one of us (S. W. H.) Dec. 15, 1931, because of an increase in the degree of ascites. She was apparently well otherwise except for dyspnea on mild exertion. Three days later 9,000 cc of straw-colored ascitic fluid was removed from her abdomen. After this procedure a firm liver could be palpated extending across the entire right upper part of the abdomen and the upper one half of the left upper quadrant. The ascitic fluid reaccumulated rapidly, and on Jan. 7, 1932, with the patient under ether anesthesia, 7,000 cc of fluid was withdrawn by paracentesis, after which an exploratory incision was made in the upper part of the abdomen. Careful inspection of the abdominal contents revealed the organs, including the spleen and the peritoneum, to be normal grossly, except for the liver, which was moderately enlarged and which was a peculiar pale pink. Its surfaces were studded with tiny vesicles which could not be ruptured by the finger or by wiping vigorously with dry gauze. A large biopsy specimen was taken from the liver, and a Talma-Drummond-Morrison operation was performed together with an omentopexy.

Portions of the liver were sent to two responsible pathologic laboratories for study. One laboratory reported "biliary cirrhosis (with parenchymatous degeneration)", the other, "hepatitis (with portal cirrhosis)". The microscopic examinations failed to demonstrate the vesicles which had been so prominent on inspection of the surface of the liver.

The wound healed by primary intention and the patient made an uneventful recovery. She was dismissed from the hospital twenty days after operation. Three weeks later the ascitic fluid had reaccumulated to such an extent that she returned for further treatment. Six grains (0.4 Gm) of ammonium nitrate was given orally each day, and injections of merbaphen were begun, after which there was a marked increase in the urinary output and a concomitant decrease in the size and tenseness of the abdomen. During March and April of 1932 the abdomen measured approximately 92.5 cm in circumference and the patient's weight averaged about 119 pounds (54 Kg). She felt well and was able to help her mother with the housework.

On May 28, 1932, after vigorous dancing at a wedding the previous day, her first menstrual period began after which she felt greatly improved and stated that her abdomen was definitely smaller. Within a month, however, it again measured 92 cm. in circumference.

1 Nordland and Larson's omentopexy was done in 1932.
2 Sutton, T. Leonard. Cirrhosis of the Liver in Childhood. Report of a Case of Atrophic Cirrhosis in a Boy Aged Ten Years. *Am. J. Dis. Child.* 39: 141-142 (Jan.) 1930.

On Nov. 8, 1932, the patient entered the University Hospital at Ann Arbor for a second period of observation. Study of the ascitic fluid revealed a specific gravity of 1.019, alkaline reaction, grade 4 albumin and a negative reaction to Gmelin's test. There were 1,080 red cells and 230 white cells per cubic centimeter of fluid. Ninety per cent of the white cells were small lymphocytes. The serum bilirubin content was 2.5 mg., and there was a direct reaction. A dextrose tolerance test revealed a blood sugar content of 86 mg. during fasting, 103 mg. at the first hour, 90 mg. at the second hour and 100 mg. at the third hour. Concomitant specimens of urine did not contain sugar. A tick-tack rhythm of the heart and a paradoxical type of pulse were noted.

With the patient on a neutral diet with forced fluids plus ammonium nitrate orally and salyrgan intravenously, the ascites was reduced almost completely, and on April 19, 1933, she was dismissed from the hospital with a diagnosis of Pick's disease. Her weight on dismissal was 111 pounds (50 Kg.).

The patient continued the neutral diet and ammonium nitrate medication at home but the ascites soon recurred, producing for the first time marked edema of the lower extremities. Paracentesis was performed at the patient's home on May 9, and 10 pounds (4.5 Kg.) of ascitic fluid was withdrawn. Six weeks later her abdomen was again greatly distended, but she stated that she was able to control the distention to some extent by means of frequent doses of magnesium sulfate.

Because of the apparent improvement after her one and only menstrual period, an attempt was made to establish a normal menstrual cycle in the hope that there might be some connection between this function and the ascites. To this end progynon tablets were given orally, and a normal menstrual flow occurred, lasting from July 5 to July 9. For several days after this period her abdomen was distinctly less tense and she felt more comfortable. On July 20, however, the circumference of her abdomen was 98.5 cm., her weight was 135 pounds (61 Kg.) and a distinct para-umbilical hernia was noted. Twelve and one half pounds (5.7 Kg.) of ascitic fluid was removed at the patient's home. Palpation of the liver showed that it was definitely softer and smaller than on any previous examination. The administration of progynon tablets was continued and another normal menstrual period occurred on August 21. Again a definite decrease in the size of the abdomen and in the degree of discomfort was noted. A month later paracentesis again became necessary, and 13 pounds (6 Kg.) of fluid was removed. On October 1 another normal menstrual period occurred, and during the succeeding six months her weight gradually decreased from 132 to 121 pounds (from 60 to 55 Kg.), with a concomitant decrease in the circumference of her abdomen from 95 to 79 cm.

From May 12, 1934, to March 1, 1937, twenty-six normal menstrual periods occurred. At first the intervals between periods were two or three months long, but since June 1935 catamenia has occurred at intervals of from thirty-one to thirty-six days. For the first year of menstruation the patient's abdomen increased in size and tension during each menstrual period and during the preceding week. For several days after each period, however, it was so reduced in size that her clothing was noticeably loose. Since her periods have occurred regularly each month her abdomen has become progressively smaller and she feels better than she has ever felt before. She did housework for one year and for the last nine months has worked steadily in a factory. She has grown in height and there has been definite increase in the size of her breasts. Her weight in March 1937 was 140 pounds (63.5 Kg.), and the circumference of her abdomen was 92.5 cm. Formerly, when she was supine the ascites was sufficient to give her the appearance of a pregnant woman at full term. At present her abdomen is almost scaphoid when she is supine, and there is no ascites. In April 1936 the margin of the liver was palpable 7 cm. below the right costal margin. In March 1937 the liver was palpable for 5 cm. The spleen has never been palpable. Since the menstrual function was established in September 1933 there has been no need for paracentesis or medication designed to promote diuresis.

COMMENT

There is some difference of opinion both clinically and pathologically as to the nature of the disease process that is present in this case. A diagnosis of Pick's disease was made

by one group of investigators. Another group felt that the x-ray appearance of pericardial effusion was produced by a posterior mediastinal mass wholly separate from the heart. However, at one time or another both groups have made a diagnosis of portal cirrhosis. One pathologist, after a study of the liver tissue removed at operation made a diagnosis of "biliary cirrhosis with parenchymatous degeneration", the other concluded that the tissue represented "hepatitis with portal cirrhosis". These differences of opinion are not rare in the field of hepatic pathology, and as many students feel that the various pathologic pictures represent nothing more than different stages of the same degenerative-reparative process, we need not be too much concerned with the failure of the two pathologists to agree exactly. From a clinical standpoint the outstanding feature in this case has been ascites of hepatic origin. Whether the ascitic fluid developed as a transudate from the portal circulation secondary to portal obstruction due to portal cirrhosis, or as an exudate from the surface of the liver, as might be the case in Pick's disease, the problem was the control of the ascites. The use of the Talma-Drummond-Morrison operation offered the only permanent solution to the problem in either case, although its use has previously been recommended only in case of portal cirrhosis. Jaundice has constantly been lurking in the background, as the brief period of icterus six years ago and the more recent direct van den Bergh reactions of the blood serum indicate.

The other point of interest has been the sexual immaturity as evidenced by amenorrhea and undeveloped breasts. Such immaturity has been mentioned by several other writers in connection with juvenile cirrhosis. Barker³ noted the association of hypoplastic breasts and infantile uterus in a girl of 17 who had cirrhosis of the liver and ascites. Tramontano⁴ reported a case of splenomegaly atrophic cirrhosis in a 23 year old man who presented definite sexual infantilism. Reuben and Peskin⁵ noted "distinct evidence of infantilism" in an 8 year old girl with syphilitic cirrhosis.

A Talma-Drummond-Morrison operation plus omentopexy was performed on our patient in an effort to improve the collateral circulation and render paracentesis unnecessary. In 1932 a similar procedure was carried out by Nordland and Larson⁶ on a 6 year old child with Laënnec's cirrhosis. Deep jaundice was the outstanding complaint in their case, ascites being found only after the abdomen was opened. Successful palliation for a period of two years followed the operation. As far as we can learn, these two cases are the only ones reported in the American literature in which such an operation has been performed for juvenile portal (Laënnec's or atrophic) cirrhosis.

It may be argued that the improvement noted in our case in the last five years has been due primarily to the operation. Against this conclusion is the fact that sustained improvement did not occur for one year and nine months after it. Only after the menstrual function was well established did the need for frequent paracentesis disappear. While it is recognized that repeated paracentesis may eventually control the ascites in some adult cases of portal cirrhosis (and this possibility must be considered here), in this case our juvenile patient demonstrates very positively an intimate relationship between menstruation and the degree of ascites. As far as her subjective sensations were concerned, there was no doubt that she was far more comfortable immediately after the menstrual flow had ceased. Clinical observations tended to confirm her own observations, since the circumference of the abdomen decreased definitely after catamenia. The fact that paracentesis and attempts at diuresis have been unnecessary in the three years since menstruation began is perhaps the strongest proof that in this case a definite relationship exists between the menstrual function and the degree of ascites. Studies on premenstrual retention of water may shed some light on this interesting problem.

3 Barker, Lewellys F. Cirrhosis of the Liver with Ascites, Splenomegaly, Secondary Anemia and Endocrinopathies in a Girl of Seventeen. Comments upon Differential Diagnosis of Coarsely Nodular Toxic Cirrhosis from Banti's Disease and Other Cirrhotoses. Treatment of Cirrhosis of the Liver. *M. Clin. North America* 14: 99-107 (July) 1930.
4 Tramontano V. Infantilism and Hepatic Cirrhosis. *Morgagni* 71: 1977-2000 (Sept. 15) 1929.

5 Reuben, Mark S. and Peskin, Robert. Cirrhosis of the Liver. *Arch. Pediat.* 47: 715-727 (Nov.) 1930.

6 Nordland, Martin and Larson, Lawrence M. Portal Cirrhosis in a Child with Successful Palliation by Omentopexy for Two Years. *J. A. M. A.* 102: 1470-1471 (May 5) 1934.

Special Articles

EQUIPMENT FOR AIR CONDITIONING

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In the first and second reports of this committee, the purposes and objectives of air conditioning have been set forth by Yaglou,¹ one of the members of this committee. The control of conditions affecting comfort, health and efficiency in an artificial space environment involves a number of physical, chemical, biologic, and even psychic factors for which tentative standards have been suggested by various more or less authoritative groups.²

"Air conditioning" is the present term adopted for covering these factors but, as commonly used, this term does not embrace other environmental conditions, such as insulation, radiation, illumination and noise, which may be important collateral factors.

The present report deals solely with the equipment designed for procuring suitable conditioning of the air. A subsequent committee report will consider the instruments and procedures suitable for examining air conditions found or produced.

The practice of air conditioning in the more modern sense began about thirty years ago in industries in which the conditions of the air, mainly the temperature, humidity and dust content, were found to affect the quality of the product or the rate of production. However, the centrifugal fan for impelling or extracting air to and from large buildings is said by Bedford³ to have been invented by Desagulier more than 200 years ago, and artificial humidification has been used, for example, in cotton textile works for a long period.

In recent years it has been found that "manufactured weather"⁴ may be profitably applied to theaters and other places of public assembly, where the investment has proved justified by increased patronage resulting from greater comfort. Increase in revenue has been the prime motive for applying air conditioning to stores, hotels, cafeterias, railway passenger cars and office buildings. Comfort and health have been the chief motives in schools, churches, lodge halls and the like. Added to these reasons, safety (in the use of anesthetics) and other special clinical considerations have appealed to the hospital. More recently, interest has been manifested in the air conditioning of private offices and residences, where the results are valued not in terms of financial profit but in terms of improved comfort or health.

This is the third report of the committee established by the American Medical Association to study air conditioning. The first report appeared in *THE JOURNAL* May 15, 1937, p. 1708 and the second report September 18, p. 945. The committee includes Carey P. McCord, Detroit, chairman; Emery R. Hayhurst, Columbus, Ohio; William F. Petersen, Chicago; Horatio B. Williams, New York; and Constantine P. Yaglou, Boston.
1 Yaglou, C. P. *The Physical and Physiologic Principles of Air Conditioning*. J. A. M. A. 108: 1708-1713 (May 15) 1937. Part II *ibid.* 109: 945-950 (Sept. 18) 1937.

2 American Public Health Association. *Report of the Committee on Ventilation and Atmospheric Pollution (Section on Industrial Hygiene)*. Year Book 1936-1937, p. 82. American Society of Heating and Ventilating Engineers. *Guide* 1937, pp. 81-83.

3 Bedford, T. *Modern Principles of Ventilating and Heating*. London: H. K. Lewis & Co. Ltd. 1937, p. 1.

4 Brezina, Ernst, and Schmidt, Wilhelm. *Das Kunstliche Klima in der Umgebung des Menschen*. Stuttgart, Ferdinand Enke 1937.

Air conditioning, in general, involves control of the following factors: temperature, humidity, air motion, air distribution, dust, bacteria, odors and toxic gases. Of these, the first three—temperature, humidity and air motion—are usually the most important, while dust, bacteria and toxic gases present special problems (chiefly industrial), and air distribution and control of odor pertain to all air conditioning.

BASIC EQUIPMENT

Any discussion of equipment for the procurement of air conditioning must be built around continual references to certain widely used procedures and appliances. Figure 1 diagrammatically presents the conditioning equipment and procedures necessary to control the aforementioned factors during all seasons, showing the primary and essential steps of filtering, preheating, humidifying, heating, or cooling and dehumidifying, which precede the circulation and distribution of conditioned air as varied conditions might require.

Entirely distinct equipment is shown in the diagram for winter and summer requirements. In actual practice, much of the same equipment may be used in any season. The filter that cleans the air in winter performs the same operation in summer. The spray that humidifies in winter may be used through modification to dehumidify in summer. All these items required in the attainment of satisfactory air conditioning are now discussed.

FILTERS

The impurities removed by filters include carbon (soot) from the incomplete combustion of fuels in furnaces and automobile engines, particles of earth, sand, ash, automobile tires, stone, wood, rust and paper, threads of cotton, wool and silk, bits of animal and vegetable matter, pollen and some bacteria.

The commonest types of apparatus for cleaning air are dry filters. In these the air is filtered through screens made of felt, cotton fabric, cellulose or glass wool. The air is passed through so many devious channels that most of the dust is entrained on the way. Because of the close texture of the filtering mediums the velocity of the air passing through the filter must be low. This necessitates a relatively large surface, and in order to increase the effective filtering area without increasing the dimensions of the filter the filter mediums are usually arranged to form interstices (pockets).

Dry filters in which felt or similar materials are employed usually depend on vacuum cleaning for reconditioning, but many inexpensive dry filters are discarded when they become clogged and are replaced.

The use of a viscous fluid, such as oil, for the retention or collection of dust is a familiar practice. The housewife uses oiled cloths for "dusting" about the house. In cleaners employing the viscous film principle, air is drawn through a device containing a series of deflecting surfaces, usually of metal, these surfaces being coated with a viscous oil. As the air impinges against these surfaces it is deflected and passed, but the heavier particles of dust or foreign matter adhere to the viscous film.

Viscous filters are of the automatic or nonautomatic type. The nonautomatic unit or cell type consists of two panels of metal screen enclosed in a frame of convenient size for handling. Filling the space between the front and back screens are packed mats of split or crimped wire or glass wool, which is impregnated with the viscous oil.

When these filters become clogged they must be cleaned out and recoiled. A more recent development is the use of units of light and inexpensive construction which are discarded and replaced when dirty.

Automatic filters of high air capacity are designed to be self cleaning. They consist of an endless vertical chain or belt of filter material arranged over a top and bottom sprocket, and moving continuously. Clean surfaces are constantly presented to the air stream, and dirtied sections pass through a tank of viscous oil at the bottom to wash off the dirty oil and recoat the belt.

The air washer is similar in effect to the cleansing action of a rainstorm on the atmosphere. Spray nozzles are placed in the path of the air, and water is discharged from them in the form of a fine mist. The incoming air is thus brought into intimate contact with the water. At the outlet to the washer are a series of zigzag plates which cause the air to change direction violently, so that the dirt is thrown out from the air by its inertia. Recent developments offer the promise of electrical precipitation as a means for the removal of ordinary dusts and bacteria.

WINTER CONDITIONING

Heating—In air conditioned spaces, direct radiation from steam or hot water radiators may be provided to make up the loss of heat from the building. In these cases the forced air circulation system supplies outdoor air in quantities sufficient for ventilating purposes only. This outdoor air must be heated to room temperature before its introduction into the occupied space.

the two previous reports of this committee¹ the necessity for humidifying or moistening the air for comfort conditioning (used only during the winter) has not been substantiated. A relative humidity of from 30 to 60 per cent is regarded as a desirable figure for the most healthful conditions. In cold weather, humidities above 30 per cent will cause condensation on single

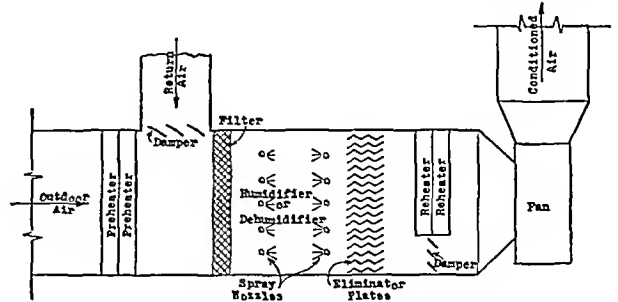


Fig 2—Spray type air conditioning apparatus

windows, however, and for this reason humidities above this figure should not be provided unless provision is made against condensation by the installation of double glass windows.

In order to preclude the possibility of freezing the water used for humidifying, it may become necessary to preheat the outside air entering the conditioning system.

Humidifiers may be classified as direct, which introduce moisture directly into the room, or indirect, which introduce moistened air. Surface humidifiers are the simplest types of moistening devices. These consist of pan type containers providing a large water surface and equipped with some means of heating the water in order to force evaporation. This heat may be applied by electricity, steam or hot water. When heat is not applied directly to the water, the heated air may be directed across the surface of the pan. This area may be increased by the use of fabric strips dipped into a supply of water and wetted by the capillary action through the material. When a large volume of air is to be moistened it is difficult to provide sufficient surface for adequate capacity, and other methods of humidification must be adopted.

In large central air conditioning systems a spray humidifier may be used to humidify the air. The air may be preheated before entering the humidifier so that its ability to evaporate moisture is increased, or the spray water with which the air is brought into intimate contact may be heated to accomplish the same purpose. When there is no central humidifier in the system, room humidifiers may be used. In these the air is passed through a direct spray, where a part of the spray water is evaporated.

In the simplest spray humidifying system the water is furnished from a constant source, such as city water. The spray may be of the direct atomizing type, in which, by means of properly designed nozzles, the water is broken up into fine particles, or of the target spray type, in which a fine stream of water under pressure impinges on a flat surface or target to be broken up into a spray. That part of the spray which is not evaporated is permitted to run to waste.

Any spray system in which water is run to waste must atomize as completely as possible to provide for the evaporation of the maximum amount of water. In order to produce fine atomization, small openings are

WINTER CONDITIONING

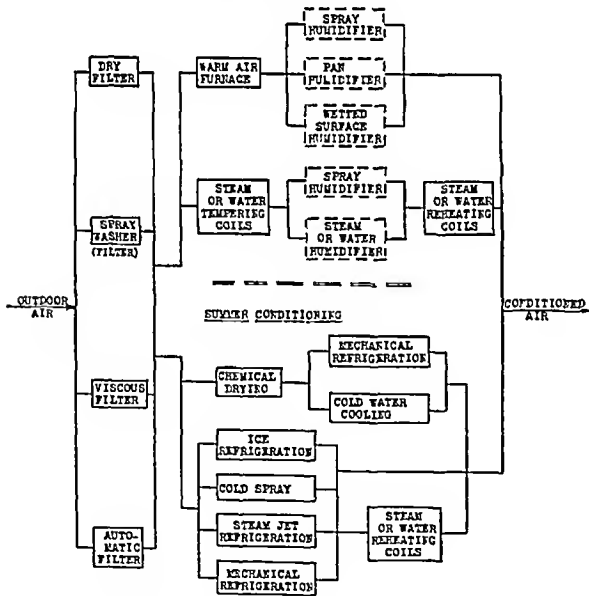


Fig 1—Essential steps in air conditioning

When no direct radiation is used as a source of heat the desired room temperature is maintained by air circulated over heated surfaces as in a furnace located elsewhere (indirect heating). A large part of the warmed air is recirculated within the building and only enough outdoor air added to provide "freshness" and freedom from odors. The reasons for this are obviously fuel economy and the size and initial cost of equipment.

Humidifying—Certain industrial processes demand a humid atmosphere the year round. As discussed in

necessary in the nozzles, which involve the danger of occasional clogging. Self-cleaning nozzles have been recently developed that materially reduce this hazard. Although all spray systems in which the water is not recirculated are wasteful of water, they are normally more economical to use in smaller installations. In large conditioning units requiring larger quantities of water the wastage may be excessive, and then it is more economical to install central humidifiers in which the water is recirculated.

Some atomizing units, in order to increase their moistening capacity, permit the spray to impinge against a heated surface, forcing its evaporation by that method, or the spray may be directed against a rotating disk, where it is mechanically separated into fine particles by the centrifugal action. One of the simplest methods of humidification is the direct introduction of steam into the air. Steam is little used for comfort conditioning because of the disagreeable odor usually accompanying it. In industrial applications, however, it is frequently used.

SUMMER CONDITIONING

Cooling—The phase of air conditioning that has been of greatest public interest in recent years is "cooling." In considering the comfort-cooling air it is perhaps best to think of cooling not as pure refrigeration.

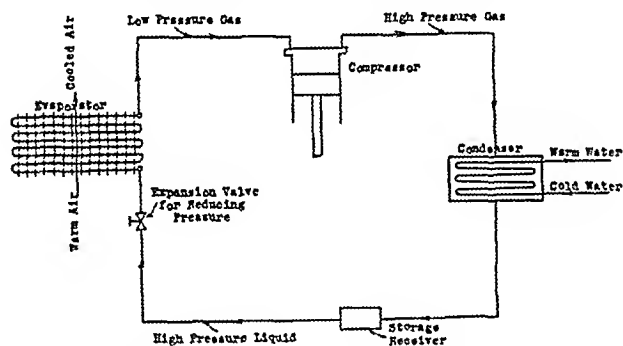


Fig. 3—Compression refrigeration cycle (with water cooled condenser) applied to air conditioning

tion of the air but as the production of a cooling effect. This cooling effect on the human body may be produced in four ways, separately or in combination, by lowering the dry bulb temperature of the air, by dehumidifying the air, by evaporative cooling (which is functionally dependent on the humidity of the air) or by increasing the air movement. Lowering the dry bulb temperature alone may result in a cold, clammy feeling which is undesirable. Dehumidifying only, without cooling, produces hot, dry air that may also be undesirable. Moderate reduction in temperature combined with adequate dehumidification is usually considered best for comfort. The use of fans for alleviating discomfort in warm weather is a common practice but the higher air velocities usually created are objectionable in considerations of comfort.

If air is passed through a water spray in which the water is continually recirculated, the dry bulb temperature of the air will be lowered, for the air will give up a part of its heat in order to evaporate water. Under ideal conditions the air would continue to give up its heat to evaporate water until it became saturated with water vapor, so that at the same time that the dry bulb temperature is dropping the humidity of the air is increasing. In hot and dry climates this system of

evaporative cooling therefore proves most successful, but it is of no value in hot and humid climates.

In localities where water from deep wells or other sources is available at low temperatures in sufficient quantities, a cheap and simple method of cooling is provided. The air is simply passed over finned tube coils, similar to those used for heating work, through which the cold water is flowing. In many localities wells supply sulfurous waters which emit objectionable odors the concentration of which is increased when the water temperature rises after it is used for cooling purposes. This situation is ordinarily controlled in some sections by the use of a closed system associated with the return of the water to another underground water bed by means of a second well.

When cold water is not available, the water flowing through the coils may be cooled by the use of ice. The ice is stored in a bunker, and the water is sprayed over the ice to be cooled, the cooled water then passing through the coils. Ice cooling equipment usually costs less than that necessary for any other method except when well water alone is used. The hourly cost of operation, however, is fairly high, so that the use of ice is not economical when the season of operation is long.

Mechanical systems of refrigeration are most extensively used at the present time. A refrigerating machine is simply a mechanical device for the removal of heat from any system.

Certain liquids have the property of boiling at low temperatures. To assure this boiling, heat is commonly necessary. If air or water is passed over an evaporating substance, any heat required to complete the boiling process will be taken from the surrounding air (or medium) and the temperature of this air will be thereby lowered. Advantage of this fact (latent heat) is taken by the use of evaporators of some types.

A refrigerating machine for air conditioning consists of three essential parts: (1) a compressor, which with draws the gaseous refrigerant from (2) an evaporator or cooler and delivers it to (3) a condenser at a higher pressure and temperature so that its heat can be removed by air or water at ordinary temperatures. Thus the gas is condensed into a liquid and returns to the evaporator through an expansion valve, which allows the refrigerant to pass at such a rate as to maintain a predetermined temperature in the evaporator coil. Finally, in the evaporator the refrigerant boils, abstracting heat from the surrounding medium to produce refrigeration. Thus the system is completely closed and the same refrigerant, in small quantity, constantly recirculated in order to conserve it. The commoner refrigerants used for air conditioning are "Freon," carbon dioxide, "Carrene," "Dichlorine" and methyl chloride.

When refrigeration is employed, the air may be cooled by either of two methods using the direct or indirect expansion systems. In the direct expansion system, usually employed in smaller installations, the evaporator, which is a continuous bent tube finned similarly to a finned heating coil, is placed in direct contact with the air to be circulated. In the indirect expansion system the evaporator is used to cool water. The actual cooling of the air is brought about either by bringing the air into intimate contact with the cold water in spray chambers through which the air is circulated or by passing the cold water through finned tubes placed in the path of the air.

Another system of refrigeration, also operating on the principle that when evaporation takes place heat is absorbed, is known as the steam ejector system. This uses water as the refrigerant. Water under a vacuum vaporizes at low temperatures. Steam discharged, or ejected, from properly designed nozzles will produce a high vacuum. In the steam ejector system water is contained in an evaporator in which a high vacuum is maintained by ejection of steam. Because of the high vacuum, part of the water will flash into steam, the heat required for the vaporization coming from the rest of the water, which is cooled to a point dependent on the vacuum maintained. The water thus cooled is circulated for air cooling purposes in the same way as water cooled by ice or mechanical refrigeration. The steam jet system requires a large amount of condenser water, approximately three times that required for mechanical refrigeration. It also requires a supply of high pressure steam. In many cases the steam may be already available as when it is used for the production of power or process work. This system is economically justifiable when the steam and a copious supply of cheap water are available.

Dehumidifying—Dehumidification is an essential part of summer air conditioning. Moisture is precipitated when the air temperature is lowered to such a point that condensation takes place. The temperature at which condensation will take place is known as the dew point. The air under artificial conditions may be cooled to the dew point temperature either by maintaining a sufficiently low temperature in the evaporator coils over which the air passes or by cooling the spray water of the dehumidifier below the dew point of the air temperature.

According to the American Society of Heating and Ventilating Engineers' Guide,⁵ dehumidification may also be accomplished by absorption or adsorption of the moisture contained in the air. Absorption implies a change in the chemical or physical structure of the absorbing material in the process of dehydration, while adsorption is purely a surface action. Sulfuric acid is a common type of absorber. Adsorbers include lithium chloride, calcium chloride, silica gel, activated alumina, lamisilite, or any of the halides.

Silica gel is a colloidal form of silicon dioxide made from sodium silicate and acid. It is a hard glassy material with the appearance of clear quartz sand. The crystals are highly porous with the voids constituting 40 per cent by volume, although the pores are microscopic in size. Silica gel possesses the ability to adsorb a large quantity (up to 25 per cent of its own weight) of moisture from the air without any change in volume, structure or composition. After the silica gel has adsorbed moisture to the limit of its capacity, the water may be driven out by the application of heat. This cycle can be repeated indefinitely. In the process of adsorption heat is liberated, raising the temperature of the dry air. This heat may then be removed from the highly dehumidified air by extended surface cooling coils.

Silica gel units usually contain two compartments. Each compartment has several trays of adsorbing material supported on screens staggered so that a part of the air to be dehumidified passes through each bed of silica gel. While one compartment is adsorbing moisture the other is being reactivated by passing hot air from a gas burner through the material in order to dry

it. Dampers automatically shift the air flow from one compartment to the other at the end of each cycle of operation.

Activated alumina contains about 90 per cent of aluminum oxide, which will adsorb nearly 100 per cent of the vapor in the air and up to 10 per cent of the weight of the adsorbing material. The application is very similar to that of silica gel, the material is exposed to the air flow and, after reaching about 75 per cent saturation, is reactivated by driving off of the adsorbed moisture by the application of heat.

Calcium chloride is the cheapest and most widely used dehumidifying substance. However, its characteristics are such that relative humidities less than 30 per cent are difficult or impossible to obtain.

The cycle of operation for liquid adsorbers is fundamentally the same as for the solid adsorbers such as silica gel and activated alumina. In systems employing liquid adsorbers such as sodium, lithium or calcium chloride, the liquid adsorber is sprayed into the air. The adsorbing liquid, because of its lower vapor pressure, removes moisture from the air with which it is in contact. As in the solid adsorption systems, the removal of moisture is accompanied by a rise in temperature of the air. However, in this case the mass of liquid contained in the adsorber tends to keep down the rise in temperature.

As moisture is removed from the air, the concentration of the liquid adsorber is weakened so that its adsorbing capacity is reduced. Regeneration, or the driving off of the excess liquid, must be performed, a process similar to the driving off of the adsorbed liquid in the solid adsorber. However, with the liquid adsorber a definite condition of concentration may be maintained by continuously withdrawing a small portion of the liquid for intensive concentration and adding this concentrate to the mass of adsorbing liquid. The vapor pressure of the mass may be held fairly constant by this method of continuous regeneration, and the relative humidity of the leaving air will be held to a definite point.

Regeneration may be accomplished by raising the temperature of the adsorbing liquid to a point above the boiling point for the particular concentration. As the salts in the solution do not vaporize, they are not carried off in the boiling process, and the concentration is increased.

Air Circulation and Distribution—The objects of ventilation (the addition of outside fresh air), as agreed on by engineers and physiologists, are usually to remove odors, toxic substances, heat and moisture. There is no agreement among authorities as to how much fresh air must be introduced into a room for each person to give adequate ventilation. The lowest figure that will insure freedom from body odors is usually taken as 10 cubic feet per person per minute.

In order to provide this necessary ventilation, most air conditioning systems are arranged to recirculate a large part of the air from the occupied space and to take from outside the quantity necessary for "ventilation." The unit conditioner fan draws air through the conditioner and delivers it directly into any given room or space. The central conditioning fan discharges into a series of ducts which distribute the air to the rooms. The total quantity of air to be handled in either case depends on the amount of heat to be added or removed and the permissible temperature difference between the entering air supply and the desired room temperature.

This point of temperature differential between the air introduced and the room temperature is particularly important in summer cooling. A blast of icy air cools a room but may be objectionable and harmful to its occupants.

In comfort-conditioning, air is introduced into the room at temperatures varying from 5 to 30 degrees below the desired room temperature. Any of several methods may be adopted so that this air may be introduced into the occupied space without causing uncomfortable drafts. In order to remove moisture from the air by condensing it out, it may be necessary to cool it to a very low temperature and then reheat it to a suitable temperature. Reheating is often accomplished by mixing cool air with warm recirculated air just before introducing the air into the room.

If air is introduced into the room in a horizontal direction at a very high velocity, a great turbulence will be created that will mix the cold entering air with room air. High velocity nozzles or grilles are used to mix the air in this way at the ceiling height, whence it descends to the floor level owing to the greater density of the colder air. The limiting velocity that can be used in jets of this type is the velocity at which noticeable noise is created. It is possible, on the other hand, to use low entering velocities when there are a large number of inlets into the room, so that the distribution is uniform.

No matter what method is adopted for distribution of air, the air velocity in the occupied zone should not exceed 40 feet per minute in winter. Somewhat high air velocities are permissible during the summer period.

SMALLER AIR CONDITIONING UNITS

Three basic types of cooling units for smaller installations are now on the market, so-called self-contained, remote and central. The self-contained unit, commonly in the form of a cabinet, is placed in the room or enclosure to be serviced. Depending on its completeness, it controls one or more of the factors listed in the first part of this paper. The remote type has the refrigerating mechanism located at some remote place (closet or the like), from which the refrigerant is piped to cooling coils inside small cabinets, which may stand on the floor or be suspended from the ceiling or walls of the room to be cooled. The central type is a self-contained unit of larger capacity and usually located in the cellar, whence it transmits the conditioned air through a duct system to the rooms or spaces to be serviced.

COMMENT AND SUMMARY

This committee report briefly presents the mechanical requirements necessary to obtain suitable control of the following factors in air conditioning: temperature, humidity, air motion, air distribution, dust, bacteria, odors and toxic gases. It is emphasized that at the present time some commercial interests are stressing excessively low summer temperatures and are permitting high air velocities in air conditioned spaces, in comparison with outdoor conditions and in some cases are failing to provide adequate dehumidifying facility, a most important item in proper summer air conditioning. Much of the air conditioning now being installed is under the control of operators and proprietors who have such a complete misunderstanding of the requirements of the human body that it promotes discomfort and jeopardizes health for persons exposed to these "artificial climates."

FIRST ANNUAL SUMMARY OF FOURTH OF JULY INJURIES

SECOND SERIES

From 1903 to 1916 the American Medical Association presented annual summaries of injuries resulting from the celebration of the Fourth of July. Since 1916, which was the first year without a single case of tetanus, these reports have been discontinued. Unfortunately in recent years a considerable increase in the number of injuries has occurred, it seems expedient therefore to renew the annual reviews.

DEATHS

This year there were twenty deaths reported as due to the celebration of the Fourth of July with fireworks or firearms. The distribution by states is given in table 1. Burns from fireworks resulted in the death of seven youngsters, gunshots were responsible for the death of four boys, two men were drowned after their boat had been wrecked by an exploding firecracker, a toy cannon explosion killed a man, and a fire caused by explosion of a display of fireworks in a store caused the death of six women and girls.

TABLE 1—Deaths by States

State	Number of Deaths
California	1
Florida	1
Idaho	6
Maryland	1
Massachusetts	2
New Jersey	1
New York	3
Ohio	1
Rhode Island	1
Texas	1
Utah	2

The worst single accident of the year occurred in Nampa, Idaho, on July 1. A shelf of fireworks in a drug store caught fire and exploded with thirty people in close proximity. This tragic display resulted in the death of six and the serious injury of several others. Another strange accident occurred, according to newspaper reports, on Cayuga Lake, N. Y. According to the story told to authorities, three men started celebrating by shooting cherry bombs and firecrackers along the shore of the lake, finally pushing out into the lake in a rowboat. A large firecracker exploded under the boat, tearing a hole in it, and two of the three men were drowned.

TETANUS

Only two cases of tetanus were reported this year, one in Minnesota and one in Ohio. Both patients recovered. The small number is due, however, not so much to lack of opportunity for tetanus to occur as to the splendid cooperation of physicians, police, hospitals and first aid units in giving tetanus antitoxin immediately following an injury. Evidently all are thoroughly cognizant of the necessity for giving tetanus antitoxin even in the presence of what appear to be relatively slight injuries.

INJURIES

Table 2 lists the number of injuries by type and cause. The total number of injuries recorded for this Fourth of July celebration numbered 7,205. Obviously this figure errs on the side of underestimation. Thus, although 4,292 questionnaires were sent out to hospitals

requesting them to list the Fourth of July injuries treated, only 2,463 were returned. In addition, doubtless more injuries were treated in first aid stations or by physicians in their offices than were treated in hospitals. The total number of injuries, therefore, was probably far in excess of those which were actually recorded.

Comparative figures with other years since 1916 are not available and hence any attempted contrast at this time would be futile. Attention, however, should be drawn to the fact that in 1916, the last year of the previous annual reports, there was not a single case of tetanus reported.

Study of the table in the light of available information discloses several important points. Thus New Jersey, which only this year received the benefit of a state law against fireworks, had only seventy-two injuries, while Pennsylvania with only 24 times the population (1930 census) and without such a state law had 991 injuries. In fact, many of the individual reports from New Jersey indicated the "bootlegging" of fireworks across the state line from Pennsylvania, and so the latter state may well be considered to have contributed materially to those injuries from fireworks which actually occurred in New Jersey. Many individual hospital questionnaires from New Jersey stated voluntarily that this year for the first time their hospitals treated no injuries from fireworks, in contrast to previous records of from 100 to 150.

Michigan, which also possesses a state law against fireworks, had only 190 injuries, while Illinois without such a state law, and a population approximately 1.5 times as large, had 485 injuries.

The Southern states, as a group, reported few injuries from fireworks. This is due principally, as was mentioned on numerous questionnaires, to the fact that in most regions of the South there is no fireworks celebration of the Fourth of July. Fireworks, however, are used at Christmas time, and many of the hospitals reported that serious injuries frequently occur at that time. (An example is that of Dec. 24, 1936, at Asheville, N. C., where a preview of the Nampa, Idaho, tragedy occurred. A fireworks display in a downtown store exploded, killing several people and burning others.)

In spite of the fact that several of the principal cities of the country have ordinances against the sale of fireworks inside their corporate limits, most of them had a large number of injuries. Table 3 lists the injuries for several of them and their rates per hundred thousand. Again it is obvious that local regulations are only slightly effective in preventing such injuries, since the forbidden fireworks can easily be purchased outside the city limits and brought in by automobile.

SERIOUS INJURIES

In addition to the deaths and cases of tetanus, newspaper clippings and hospital questionnaires recorded a considerable number of persons, mostly children, so seriously injured that they will bear the scars of their experience for the rest of their days. There were many bad burns, chiefly from sparklers, in many instances requiring prolonged and persistent hospital care and often resulting in permanent scarring. In one serious accident in Jamaica, N. Y., according to newspaper clippings, three high school students were seriously injured by experimenting with certain chemicals for celebration purposes. Both hands of one boy were amputated and one hand of another. The eye injuries

from the standpoint of numbers and permanent disability were perhaps the most appalling. Table 2 lists them by state but can give no true picture of their individual significance.

TABLE 2—Types and Causes of Injuries

State	Type of Injury				Cause of Injury			
	Burns and Lacerations	Loss of Eye	Injury to Eye	Loss of Finger, Hand or Other Member	Total Injuries	Crackers and Torpedoes	Display Fireworks*	Cannon and Firearms
Alabama	7				7	6		1
Arizona	29	1	2		32	30	1	
Arkansas	6		1		7	7		
California	438		20		458	468	14	3
Colorado	114	1	3	1	119	117	1	1
Connecticut	101		3		104	93		11
Delaware	23		2		25	23	1	1
Dist. of Columbia	73		5		78	76	2	
Florida	21		2		23	21		2
Georgia	9				9	6	3	
Idaho	51	1			52	48	3	1
Illinois	465	1	18	1	485	443	27	13
Indiana	263		14	1	278	211	50	17
Iowa	67		6	3	76	71	2	3
Kansas	90		3		93	91	1	1
Kentucky	58	1	2		61	50		10
Louisiana	12				12	12		
Maine	64		2	1	67	62	2	3
Maryland	114		9		123	113	7	3
Massachusetts	331		23	2	356	357	4	15
Michigan	184		6		190	188	2	
Minnesota	77		12		89	80	7	2
Mississippi								
Missouri	497	1	10	2	510	475	3	32
Montana	39	1	10		50	48	1	1
Nebraska	44		5		49	44	5	
Nevada								
New Hampshire	34		3	3	40	38	2	
New Jersey	70		2		72	70	1	1
New Mexico		1			1	1		
New York	1,322	1	46	2	1,371	1,302	52	17
North Carolina	2	1	1		4	1	2	
North Dakota	11	1	2		14	14		
Ohio	330	1	20	2	353	370	16	13
Oklahoma	90	2	8	1	101	91	6	4
Oregon	42		3		45	45		
Pennsylvania	935	1	30	5	971	948	24	19
Rhode Island	372		9		381	379	2	
South Carolina								
South Dakota	9				9	9		
Tennessee	1				1			1
Texas	32		1		33	28	3	2
Utah	27		2	2	31	26	3	2
Vermont	18		2		20	19	1	
Virginia	18				18	18		
Washington	147	1	5		153	138	14	1
West Virginia	27		1		28	24	3	1
Wisconsin	68		4		72	60	1	1
Wyoming	9		1		10	7	2	1
Unknown	37				37	36	1	
Totals	6,838	16	294	37	7,205	6,746	271	185

* Includes sparklers, rockets and roman candles.

TABLE 3—Injuries in Principal Cities

City	Injuries	Rate per 100,000
New York	524	7.36
Chicago	22	6.66
Philadelphia	201	10.30
Detroit	62	3.03
Los Angeles	43	3.63
Cleveland	64	7.11
St. Louis	322	33.17
Baltimore	36	6.93

COMMENT

In spite of the apparent effectiveness of the campaign by the American Medical Association which terminated twenty-one years ago, there has been an evident increase in the misdirected celebration of Independence Day by dangerous fireworks. This increase has occurred in

spite of the fact that municipalities and good citizens generally have continued their efforts to regulate the sale and use of fireworks. Part of the increase may be due to lack of social consciousness of this dangerous activity. Part seems to be due to the fact that in spite of legal regulations the almost universal use of the automobile has made city limits and even state lines no longer any material barrier to the transportation of much illegal material. All of the previous reports of THE JOURNAL on this subject stated that "the responsibility clearly rests with city governments." Evidently this no longer holds strictly true, since city governments cannot enforce regulations outside their limits and transportation is now too easy.

Special Clinical Article

A SIX YEAR STUDY OF THE CLINICAL EFFICACY OF VARIOUS DIGITALIS PREPARATIONS

CLINICAL LECTURE AT ATLANTIC CITY SESSION

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Although an excellent book on digitalis has recently been published¹ and numerous papers have been written concerning the efficacy of various glucosides of digitalis,² confusion still exists in the mind of the average practitioner as to the indications for the use of digitalis, the best method of its administration and the most efficient type of preparation to be used. Unfortunately, from time to time various articles with conflicting opinions as to the indications and contraindications for digitalis have appeared in the medical periodicals. Furthermore, the problem has been rendered more difficult by the more or less generalized change from the tincture to use of the powdered leaves in tablet, capsule or pill form, the introduction of the term cat unit³ in expressing biologic potency and dose and the pressure of salesmanship of the manufacturing drug firms as to the special merits of their respective preparations.

The purpose of the present paper is (1) to emphasize a few of the main indications and contraindications for digitalis, (2) to review briefly its mode of action, the dose and methods of administration and (3) to discuss the therapeutic merit of several special preparations of the isolated digitalis principles (glucosides), compared with whole leaf preparations, as determined in a clinical study during the last six years.

Read in the General Scientific Meetings at the Eighty Eighth Annual Session of the American Medical Association, Atlantic City, N. J., June 7, 1937.

This work was done through the Rohmette Foundation of the University of Pennsylvania and the W. W. Stroud Jr. Fellowship in Cardiology of the Pennsylvania Hospital.

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3. A cat unit represents the minimum amount of digitalis which is required per kilogram of body weight to kill a cat when injected slowly and continuously intravenously. It represents 1½ grains (0.1 Gm.) of powdered leaves or 1 cc. (15 minims) of tincture.

INDICATIONS

More than a hundred years ago digitalis lost favor as a therapeutic agent because of its inability to slow tachycardias due to fever, and yet today many physicians prescribe digitalis with the hope of slowing rapid heart action due to fever, thyrotoxicosis, hypersensitivity of the sympathetic nervous system and peripheral circulatory failure. This practice is especially common in connection with surgical procedures, digitalis being given postoperatively in some places almost as a matter of routine.

Needless to say, digitalis proves of no advantage in the treatment of such conditions except in certain cases of thyrotoxicosis accompanied by cardiac disease of different etiology (such as a rheumatic valvular defect associated with congestive heart failure) or in cases of pneumonia complicated with auricular fibrillation or auricular flutter. As shown in the study of pneumonia at Bellevue Hospital,⁴ digitalis when indicated in the treatment of this disease should be given only in divided doses, since massive doses may prove distinctly dangerous.

During the last two decades, several investigators have called attention to the differential diagnosis between circulatory failure due to disease of the heart and circulatory failure resulting from collapse of the peripheral vascular system. As described by Harrison,⁵ "The clinical picture of peripheral circulatory failure (shock, collapse) is characterized by weakness as the chief subjective phenomenon, and by ashen pallor, cold clammy skin, tachycardia, weakness of the pulse, diminution in systolic pressure." In emergencies of this character, digitalis proves of but little—if any—benefit, and, through recognition of this fact, the formerly rather prevalent procedure of administering this drug postoperatively (in ridiculously small doses) to patients with circulatory failure of peripheral origin has been abandoned. Digitalis is seldom indicated in emergencies unless there is definite evidence of right or left ventricular failure, and then in order to secure clinical benefit within a few hours large doses are necessary.

Although some clinicians still question the statement that proper digitalization improves tonicity and contractility of the myocardium, it is our opinion, as stated in a previous publication by one of us,⁷ that the therapeutic benefit of digitalis is effected in one or all of three ways, as follows:

1. By slowing the heart rate, that is, by lessening the number of ventricular systoles per minute, the diastolic period is lengthened, whereby ventricular filling is rendered more complete, and the heart muscle fibers are afforded more rest, and as a consequence, there may result a greater expulsion of blood into the circulation with each systole.

2. By increasing the cardiac tone, thereby relieving or preventing dilatation of the heart chambers beyond the physiologic limit, the optimum cardiac output is made possible. When the length of the heart muscle fibers is increased beyond a certain limit, the cardiac output is decreased and "heart failure" is believed to result. Restoration of the fibers to a

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shorter length is a factor in bringing about an increase in cardiac output, with the possible return of circulatory efficiency.

3 Through increase of the extent of ventricular contraction, there tends to be an increase in cardiac output when heart failure is present.

If the effects mentioned are to be expected from digitalization, the question arises as to when in the course of progressive cardiovascular disease the patient should be digitalized. Christian⁸ expressed the opinion that, as soon as a diagnosis has been made of cardiovascular disease (particularly hypertension or valvular disease) which may place an additional burden on the myocardium, the patient should be digitalized and digitalization should be maintained throughout the remainder of life. On the other hand, Harrison and Leonard⁹ (in a study of dogs) and Burwell, Neighbors and Regen¹⁰ (in a study of human beings) found that a reduction in output of the normal heart occurs with full digitalization. Certain studies¹¹ suggest that if the heart is normal or has perhaps a slight degree of dilatation and hypertrophy, digitalis lessens the efficiency of the heart muscle and also decreases the flow in the coronary arteries. The same studies indicate that there may be a stage in the progressive dilatation and hypertrophy of a laboring myocardium at which digitalis seems to improve the efficiency of the heart muscle and also the flow from the coronary sinus into the heart. Hypertrophy and dilatation unchecked tend toward a point where a certain optimal length of the fibers of the heart muscle is exceeded and a decrease in cardiac output results (described by Starling¹² as the law of the heart), with gradual or sudden development of signs of heart failure. On the basis of this hypothesis, it is the physician's responsibility to estimate—through the patient's history, the physical appearances, electrocardiographic and x-ray studies and his knowledge of the usual progression of the various cardiovascular diseases—just when the stage has been reached (as shown in the accompanying illustration) at which digitalization will preserve optimum cardiac output through increase of tonicity and extent of ventricular contraction.¹³

It is our belief, therefore, that in the treatment of patients with progressive chronic cardiovascular disease digitalization should not be started as a matter of routine at the time of diagnosis but when, in the opinion of the physician, the pathologic processes have progressed to a point where digitalization may increase ventricular output and improve coronary flow.

METHOD OF ADMINISTRATION

The vast majority of patients can take digitalis by mouth. Although the emetic action of digitalis is not due to a direct irritant action on the gastric mucosa but is a reflex effect from the direct action of the drug on the heart (the impulses passing from the heart to the vomiting center in the medulla), occasionally psychic vomiting due to knowledge of the toxic gastric effects is encountered. Intravenous digitalis therapy is seldom indicated. Subcutaneous administration is necessary

only in the presence of vomiting or unconsciousness or when the patient is unable to swallow. Rectal administration is seldom necessary.

It is generally admitted by physicians with experience in both methods of administration that tablets, capsules or pills of powdered digitalis leaves are much more practical than the tincture. In the first place, such preparations seem to maintain their potency better than the tincture, and, in the second place, the dosage is much more accurate, since even with the standard minim dropper the patient is apt to miscount the number of drops. The impossibility of accurate dosage in the absence of a standard minim dropper is well known to all who have tested the average medicine dropper sup-



Stage at which digitalization will preserve the optimum cardiac output.

plied by the drug store.¹⁴ Furthermore it is more convenient to carry tablets, capsules or pills than a bottle of the tincture.

According to our experience the large dose method of administering digitalis is seldom necessary. In emergency cases when there is no vomiting, full digitalization can be accomplished with tablets of standardized digitalis (or their equivalent in glucoside preparations) when given by mouth, in from 4½ to 6 grain (0.3 to 0.4 Gm) doses every six hours, within twenty-four to thirty-six hours. In the average case of congestive heart failure, complete digitalization can be accomplished in from forty-eight to seventy-two hours by administration of 3 grains (0.2 Gm) of digitalis three times a day. For an ambulatory patient with heart failure of mild or moderate degree, full digitalization can be accomplished for six or seven days by a 1½ grain (0.1 Gm) tablet given three times a day. After digitalization it has been our experience that the average maintenance dose is about 1½ grains daily. Of course some patients may require slightly larger doses,

14 A dose in drops from an ordinary dropper has from two to three times the number of drops as the same amount measured in minims.

8 Christian H A Use of Digitalis Other than in Treatment of Cardiac Decompensation J A M A 100 789 (March 18) 1933

9 Harrison T R and Leonard B W Effect of Digitalis on Cardiac Output of Dogs and Its Bearing on Action of Drug in Heart Disease J Clin Investigation 3 136 (Oct.) 1926

10 Burwell G S Neighbors deWitt and Regen E M J Clin Investigation 6 125 (Dec.) 1927

11 Kountz W B Per oral communication to the authors

12 Starling E H The Lincac Lecture on the Law of the Heart given at Cambridge in 1915 London Longmans Green & Co 1918

13 Cohn A E and Stewart H J J Clin Investigation 1 97 (Oct.) 1924 6 53 and 79 (Aug.) 1928 Cohn A E and Steele J M ibid 11 871 (Sept.) 1932 Stewart H J and Cohn A E ibid 11 897 (Sept.) 1932 11 917 (Sept.) 1932

while in other instances the maximum effect is maintained by means of considerably smaller doses, even as little as one-half grain (0.03 Gm) daily.

In summary then, 1½ grains of a properly standardized tablet, capsule or pill of digitalis leaves is equivalent to 15 minims (1 cc), or approximately 45 drops, of a well standardized tincture. In general physicians are finding the tablet, capsule or pill a much more convenient form for administering digitalis than the old fashioned tincture. It is necessary to use between 18 and 30 grains (1 and 2 Gm) of digitalis to digitalize fully the average adult patient. Except in emergencies

tions made from powdered whole digitalis leaves has logically evolved from the stability, accuracy of dosage and satisfactory clinical results of this form of the drug. In addition to whole leaf products, many "purified" preparations containing one or more of the glucosides of digitalis are now available. It is possible that the necessity for bio-assay may be obviated with these preparations, and clinically they should be reliable and efficient. The great variation in their equivalent doses, however, has added confusion to the problem of digitalizing the patient and establishing a maintenance dose.

The clinical comparison of different preparations of digitalis is a difficult procedure. The digitalizing dose and the daily maintenance dose of one preparation may be sufficient to maintain circulatory efficiency in a given patient, while the same dose of another preparation may, while satisfactory, hold the patient continuously closer to toxic manifestations. In other words, "in making such a study it must be remembered that there exists in a majority of patients with established auricular fibrillation a fairly wide margin between the minimum dosage necessary for optimum digitalization and the maximum dosage which can be tolerated without the incidence of toxic effects."²

During the past six years we have conducted a clinical study using several preparations of digitalis.¹³ The data on fifty-six of a large number of patients observed during this period are satisfactory for analysis. Thirty of the patients had organic heart disease with chronic auricular fibrillation and were taking digitalis when they came under observation. All these patients were observed for two or more years and were ambulatory, and practically all developed rapid ventricular rates with pulse deficit if digitalis was omitted. Seventeen were observed for three or more years and eleven for over four years. Twenty-six patients had never received a preparation of digitalis before coming under observation because of heart failure. All were hospitalized, and the digitalizing dose of a given preparation was determined by clinical trial. Seventeen patients had auricular fibrillation, three had auricular flutter and in six normal sinus rhythm was present.

Our first study was with American Heart Association whole leaf tablets of digitalis as prepared by Gold at Cornell University, the 'tabloids' of whole leaf digitalis prepared by Burroughs, Wellcome and Company, and Digalen a preparation of purified glucosides supplied by Hoffman-LaRoche Inc. Ambulatory patients with established auricular fibrillation, twenty-five in number, were selected from the adult heart clinic of the Pennsylvania Hospital and divided into three groups similar as to age, and degree of circulatory efficiency. The clinical course of the three groups was followed for nine months on the three respective preparations of digitalis. During the subsequent six months, four of the nine members of the group which had previously received the preparation containing only the glucosides were changed to the commercial whole leaf tablet, and the others were given the American Heart Association product. Five of the seven patients originally given the commercial whole leaf product were changed to the glucoside preparation, and the remainder were given the A. H. A. product, six members of the group started on the A. H. A. product were then placed on the glucoside tablet, and three were given the commercial whole leaf product. Each patient reported to the cardiac clinic at intervals of from one to four weeks for a check up of symptoms and a physical examination which included a vital capacity determination. Orthodiagraphic and electrocardiographic studies were made every three or four

TABLE 1—Clinical Course of Patient S F

Date	6/15/33*	7/13/33	8/3/33†	8/17/33	9/21/33	12/14/33
Aver daily dose grains	1½	0	1/160	1/240	1/240	1/240
Weight pounds	118	116	116	115	116½	118
Ventricular rate	80	100	116	70	72	84
Pulse rate	80	92	88	70	72	84
Dyspnea	0	0	+	0	0	0
Edema	0	0	0	0	0	0
Lung (râles)	0	0	+	0	0	0
Liver cm palp	0	0	0	0	0	0
Blood pressure	110/70	110/76	88/48	108/70	106/64	120/80
Vital capacity cc	2 600	2 600	2 150	2 600	2 600	2 600
Date	5/10/34‡	6/21/34§	7/5/34	10/4/34	1/31/35	4/11/35
Aver daily dose grain	1/240	1/300	1/600	1/600	1/600	1/600
Weight pounds	118	121	116	122	122	124
Ventricular rate	66	112	68	80	68	80
Pulse rate	66	100	68	80	68	80
Dyspnea	0	+	0	0	0	0
Edema	0	0	0	0	0	0
Lungs (râles)	0	+	0	0	0	0
Liver cm palp	0	0	0	0	0	0
Blood pressure	110/70	104/78	110/70	104/70	116/70	120/80
Vital capacity cc	2 400	2 000	2 150	2 150	2 100	2 000
Date	7/11/35	8/8/35¶	9/5/35#	9/19/35	10/10/35	
Aver daily dose grain	1/600		1/240	1/240	1/240	
Weight pounds	126	129	130	129	132	
Ventricular rate	84	72	112	76	76	
Pulse rate	84	72	96	76	76	
Dyspnea	0	0	+	0	0	
Edema	0	0	0	0	0	
Lungs (râles)	0	0	+	0	0	
Liver cm palp	0	0	0	0	0	
Blood pressure	114/80	120/80	120/80	120/70	104/76	
Vital capacity cc	1 900	1 700	1 200	1 500	1 700	

* This patient was observed from January to October 1932 while receiving Burroughs Wellcome and Company digitalis 1½ grains daily. From October 1932 to June 1933 his condition was controlled by 1½ grains of digitalis daily. All medication was stopped on this date.

† Administration of verodigen 1/160 grain daily started on this date.

‡ Condition previously controlled by this dose of verodigen for nine months. All medication stopped on this date.

§ Digitaline (Nativelle) started on this date.

¶ Maintenance dose of 1/600 grain of digitaline (Nativelle) for thirteen months prior to this date.

All medication stopped on this date.

|| Digoxin 1/240 grain twice daily started on this date.

our usual routine is to give the patient 1½ grains of powdered digitalis four times a day (6 grains daily) for three days. Thus with a total of 18 grains we approach full digitalization with little danger of toxic symptoms. From then on the daily dose is determined by the condition of the patient's circulation or the development of toxic symptoms. The average daily maintenance dose of digitalis is between one-half grain and 3 grains a day.

CHOICE OF PREPARATION

"The proof or disproof of a drug's efficacy rests finally on the test in patients." This statement of Sir Thomas Lewis applies especially to digitalis preparations. A drug of the value and having the widespread use of digitalis deserves the greatest consideration from the practical clinical standpoint. In a given case the therapeutic efficiency may largely depend on a sufficient but nontoxic dose. The present popularity of prepara-

¹³ The following physicians assisted in this study at various times: Albert W. Bromer, J. Roswell Gallagher, Norman I. Shamway, D. L. W. Leis, Noble F. Crandall and Dewitt W. Demmick.

months During our study of more than eighteen months, no striking difference was observed in the general clinical picture, including the ability to work of the members of the three groups ¹⁶

The final check up of the original twenty-five patients with whom the study was begun in 1931 is of interest Twelve patients are still living, and eleven of these are still regular attendants at the cardiac clinic Of ten patients with marked cardiac enlargement, only three are living Six of eleven patients with moderate cardiac enlargement are alive, and of four with slight enlargement three are in relatively good health and working

Our second study was with verodigen—a gitalin glucoside of digitalis Five patients with established auricular fibrillation and one patient with auricular flutter, all previously untreated with digitalis, were digitalized with this drug, as were two patients with regular sinus rhythm and advanced congestive heart failure Of the ambulatory patients whose established auricular fibrillation had previously been controlled with whole leaf digitalis preparations or digalen, four-

TABLE 2—Clinical Course of W S, a White Man Aged 38, Who Had Rheumatic Heart Disease with Mitral Stenosis and Auricular Fibrillation

Date	5/9/30*	5/23/35	7/11/35†	8/1/35	8/29/35	9/12/35
Aver daily dose grain	1/1 200	1/1 200	1/600	1/300	1/300	1/300
Weight pounds	128	131	129	130	132	135
Ventricular rate	84	100	120	84	80	60
Pulse rate	84	100	112	84	80	60
Dyspnea	0	0	0	0	0	0
Edema	0	0	0	0	0	0
Lungs (râles)	0	0	0	0	0	0
Liver, cm palp	0	0	0	0	0	0
Blood pressure	120/70	120/70	130/70	110/70	120/60	110/70
Vital capacity cc	3 100	3 000	3 300	3 200	3 200	3 100
Complaints	None	None	None	None	Ano rexia	Ano rexia

* Condition controlled on 1/600 grain of digitaline (Nativelle) for eight months prior to this date A daily dose of 1/1 200 grain started on this date
† Daily dose of 1/600 grain resumed on this date

teen were given verodigen Clinically we found 1/240 grain of verodigen to be equivalent to one cat unit (approximately 1 1/2 grains of powdered digitalis), and the total dose necessary for digitalization from 1/20 to 1/12 grain administered over five or six days The most frequent adequate maintenance dose of verodigen was 1/240 grain daily ¹⁶
For about one year our study was concerned with digitaline (Nativelle) Twelve patients with heart disease who had previously received no preparation of digitalis were digitalized by this glucoside Eighteen patients whose established auricular fibrillation had previously been controlled by one or more preparations of digitalis were given digitalin The average period of observation for this group was ten and one-half months The total dose necessary for digitalization varied from 1/50 to 1/30 grain when administered over five or six days The most frequent adequate maintenance dose was 1/600 grain daily
Our most recent study was made with Digoxin ¹⁷ It was carried out in a similar manner, and twenty-seven

patients were observed Six of them had never previously received digitalis in any form, and the remaining twenty-one had been maintained with one or more other preparations of digitalis The average period of observation of the latter group was eight and one-half months The most frequent satisfactory maintenance dose of this product was approximately 1/160 grain daily, and we feel that this dose is clinically the equivalent of one cat unit of standardized digitalis leaves

The following case presents an example of the type of ambulatory patient observed The data recorded are a portion of those obtained during a four and one-half year period of observation while the patient was receiving five different preparations of digitalis The effect of stopping all medication for a few weeks is well shown The gradually decreasing vital capacity is of interest Clinically there was no change in the patient's condition during the study

S F, a Jew, aged 32, complained of rapid heart action of three months' duration, with fatigue, dyspnea on exertion and cough, on his first visit to the Cardiac Clinic of the Pennsylvania Hospital, in June 1931 At the age of 15 years he had been told that he had a heart murmur, however, he had been in excellent health and had been very active physically previous to 1931 Physical examination revealed cardiac enlargement, mitral stenosis and insufficiency and auricular fibrillation, without any signs of congestive failure Since 1931 he had been taking digitalis regularly

The cardiovascular diagnosis was as follows A, unknown (tonsillitis), B, cardiac enlargement, mitral stenosis and insufficiency, C, auricular fibrillation, D, class 2a The clinical course is shown in table 1

The data in table 2 show the effect of increasing or decreasing the maintenance dose of a digitalis preparation in treating a condition previously well controlled on the same preparation

COMMENT

The results of a clinical study of this type must be interpreted in the light of the normal variations and the personal element involved It is essential that a large number of patients be observed over a considerable period of time (One of us has personally observed all the patients included in this study) The natural history of disease must be considered, and gradual progression of the pathologic lesion is to be expected in many cases Complications, especially infectious or embolic, may alter the course of the disease It is wise to include patients who have never previously received any preparation of digitalis Patients with established auricular fibrillation and inherently rapid ventricular rates are the most satisfactory when one is judging the digitalizing and the maintenance dose of a given preparation

There seems to be little relation between the weight of the patient and these doses For practical purposes the weight need not be considered The important point is to give the patient a sufficient amount of the preparation, avoiding overdoses In a given patient this amount can be determined only by clinical trial It should be remembered that the more severe the heart damage the less the margin of safety in using digitalis preparations With a bad myocardium, toxic rhythms (premature beats, coupled rhythm and ventricular tachycardia) may appear before nausea and vomiting or other signs of an overdose

The release of digitalis preparations or other similarly acting drugs before the dosage and efficacy are determined by adequate clinical trial is to be deprecated

16 Tr Am Climat. & Clin A 51 51 (Oct) 1935
17 The manufacturers of verodigen—Merek & Co—and of digitaline (Nativelle)—E Fougera & Co Inc.—claim that their preparations are pure stable crystallized glucosides isolated from the leaves of digitalis purpurea and the manufacturers of digoxin—Burroughs Wellcome & Co—claim that it is the same type of glucoside isolated from the leaves of digitalis lanata If these claims are true these three preparations should keep indefinitely and the dose can be determined by weight without the necessity of animal bioassays

The dosage determined by biologic assay may have more or less than the predicted potency when the drug is administered orally to man. Experience with one product in which the strength for man was three times that predicted by the biologic assay² has led us to be cautious in evaluating these products on the basis of animal experimentation.

A better result from a given product of digitalis may be due to a relatively greater amount of potent substance rather than to a greater efficacy of the product as compared to some other preparation. This fact probably accounts for much of the improvement seen in patients after they change from one preparation to another.

It has long been known that potent preparations of digitalis produce nausea and vomiting if given in sufficient doses. We have observed these symptoms with all glucoside preparations studied. Other manifestations of toxicity, such as coupling of premature beats, were also noted in all instances. There was no evidence that digitalization was effected more rapidly with any

TABLE 3—Doses of Various Preparations

Name of Preparation	One Cat Unit Grains	Full Digitalization, Grains
American Heart Association whole leaf tablet	1½	18 30
Burroughs, Wellcome & Co whole leaf tablet	1½	18 30
Digalen	1½	18 30
Verodigen	1/240	1/20 1/12
Digitalin (Nativelle)	1/600	1/50 1/30
Digoxin	1/160	1/13 1/8

of the glucoside preparations than with digitalis leaves, when given by mouth. After cessation of the drug in a fully digitalized patient, "digitalis effects" seemed to persist for about the same length of time (from three to six weeks) with the various preparations.

All the glucoside preparations tested were uniformly potent and stable. The clinical results were similar and equal to those of standardized digitalis leaves when given in sufficient doses, but they were in no way superior. If these preparations are pure substances, as is claimed, it would seem safe to dispense with biologic assay, which should reduce the cost of manufacture considerably.

It is possible that in the future the chemical isolation and standardization of digitalis glucosides may be the method of choice in producing preparations for clinical use. It seems logical, however, if all the glucosides are potent when given orally to man, that the whole leaf which contains all these substances may be preferable clinically.

SUMMARY AND CONCLUSIONS

The clinical equivalent of approximately 1 cat unit of the preparations studied is listed in table 3. This is the average daily maintenance dose. The second column contains the average full digitalization dose given over a period of from three to six days.

All the preparations were uniformly potent and efficacious and produced similar effects when given orally in equivalent doses.

There was no evidence that the glucoside preparations, when given by mouth, were quicker in action, more efficient, more prolonged in action or less toxic than standardized whole digitalis leaves.

1011 Clinton Street

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT:

THE COUNCIL WISHES TO EXPRESS ITS APPRECIATION FOR THE VALUE OF ASSISTANCE RENDERED IN THE PREPARATION OF THIS REPORT BY DRs. GEORGE M. COATES, LEE W. DEAN, EDMUND P. FOWLER, AUSTIN A. HADEN, ISAAC H. JONES, DOUGLAS MACFARLAN, HORACE NEWHART, BURT R. SHURLY AND WILLIAM P. WHERRY.

HOWARD A. CARTER, Secretary

PURPOSE OF AUDIOMETERS

A clinical audiometer is an instrument for measuring the acuity and range of hearing.

TENTATIVE MINIMUM REQUIREMENTS FOR ACCEPTABLE AUDIOMETERS

A. Specifications—

1. Audiometers shall produce vibration at frequencies within hearing range (approximately 128 to 8,192 cycles, or higher, per second). They shall be equipped for testing both air and bone conduction.

2. Frequencies (a) Continuous frequencies (sweep) from 128 to 8,192 (or higher, for example, to 16,000) cycles per second.

(b) Fixed frequencies from 128 to 8,192 cycles per second. If discrete frequency steps are provided, the tones shall be 128, 256, 512, 1,024, 2,048, 4,096, 8,192 cycles per second. Numerical annotations to be used designate pitch.

(c) The limits of tolerable frequency variation shall be not more than ± 5 per cent at all frequencies. Dials shall be marked so that frequencies may be identified readily.

3. Attenuation. Audiometers shall be calibrated in decibels, with 5 decibels per step or less. In no case should more than 5 decibel steps integrals be used. Tolerant limits to be within $\pm 1\frac{1}{2}$ decibel per 5 decibels steps and ± 5 decibels cumulative at any portion of the intensity range. Dials shall be easily read. The term "percentage hearing" shall not be used, but hearing losses shall be reported in decibels units loss.

4. Range of Intensity. The intensity range of the test tones above the normal threshold shall be at least that as follows:

Test Tone Cycles per Second	Intensity Range Decibels
128	60
256	80
512	85
1,024	90
2,048	90
4,096	90
8,192	80

5. Wave Form. The purity of the tone in the air conduction receiver shall be such that the harmonics at any particular frequency shall be at a level not less than 40 db below the fundamental tone or that other accessory noises (such as the line hum, click of interrupting switches, etc.) shall in any way interfere with the test tone.

6. For a bone conduction receiver, the sensation level of the sound reaching the tympanum through the auditory meatus shall be at least 5 decibels below the level generated by bone conduction at all test frequencies as judged by a normal ear, when the bone conduction receiver is placed on the mastoid region.

7. Power Supply. Either alternating or direct current, alternating-direct current or battery.

8. Ruggedness of construction to stand reasonable usage. Use of readily obtainable and replaceable parts.

9. Uniformity in calibration in decibels.

10. Advisability of the selection of a central, disinterested agency for reporting on physical characteristics of various audiometers.

11. Advisability of manufacturers assuring servicing.

B. Audiogram or Auditory Chart—

(To be adopted later when a more definite consensus of opinion develops.)

C. Definition of Threshold of Hearing.—The threshold of hearing is the audiometer setting corresponding to the lowest

intensity at which the person being tested is able to indicate correctly more than half the time that he is hearing

D Marketing and Advertising—Rules of the Council on Physical Therapy shall be adhered to by manufacturers of acceptable audiometers

Council on Pharmacy and Chemistry

REPORT OF THE COUNCIL

PANTOPON "ROCHE" II

PANTOPON "ROCHE" WAS ACCEPTED BY THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR INCLUSION IN NEW AND NONOFFICIAL REMEDIES IN 1915 AS PRODUCING ESSENTIALLY THE EFFECTS OF OPIUM, BUT BEING DEVOID OF ITS EXTRACTIVES IT MAY BE USED HYPODERMICALLY. IN 1931 IT WAS OMITTED FROM NEW AND NONOFFICIAL REMEDIES BECAUSE OF EXTRAVAGANT AND UNWARRANTED ADVERTISING CLAIMS OF THE DISTRIBUTOR. SINCE THAT TIME THE COUNCIL'S ATTENTION HAS BEEN CALLED TO PROMOTIONAL MATERIAL ISSUED BY HOFFMANN LA ROCHE INC WHICH APPEARED TO REPEAT THE OBJECTIONABLE CLAIMS. THE COUNCIL RECENTLY CONSIDERED SUCH A CIRCULAR AND POINTED OUT TO THE FIRM ERRONEOUS STATEMENTS CONCERNING THE COMPARATIVE CONTENT OF PANTOPON IN RELATION TO MORPHINE SULFATE. THE FIRM AFTER RECEIVING A STATEMENT OF THE COUNCIL'S CONSIDERATION REPLIED THAT THE ERRONEOUS STATEMENTS WERE MISTAKES WHICH WOULD NOT OCCUR AGAIN AND ASKED THAT THE REPORT OF THE COUNCIL'S CONSIDERATION BE WITHHELD FROM PUBLICATION. THE FIRM INTIMATED THAT IT WOULD RESUBMIT THE PRODUCT FOR RECONSIDERATION. IN THE MEANTIME THERE CAME TO THE REFERENCE'S ATTENTION A STUDY BY DRS J M HAYMAN JR AND HERBERT FOX WHICH CONFIRMS THE COUNCIL'S CONTENTIONS CONCERNING PANTOPON. THE COUNCIL CONSIDERED THIS REPORT AND AUTHORIZES PUBLICATION.

THE COUNCIL WISHES AT THIS TIME TO EXPRESS ITS APPRECIATION TO DRS HAYMAN AND FOX FOR MAKING THE FOLLOWING REPORT AVAILABLE

PAUL NICHOLAS LEECH Secretary

COMPARISON OF THE ANALGESIC ACTION OF PANTOPON AND MORPHINE SULFATE

J M HAYMAN JR, MD
AND
HERBERT FOX, MD
CLEVELAND

Asserting that the action of opium possesses certain advantages over that of morphine, Professor Sahli induced Dr Scharges of the Hoffmann-La Roche Laboratories to prepare a mixture of the hydrochlorides of all the alkaloids of opium, in the proportions occurring naturally, in a form suitable for hypodermic injection. This preparation was called Pantopon, and Sahli¹ in 1909 reported its satisfactory use but without giving any details of its supposed superiority over morphine. Since this paper many references to Pantopon have appeared in the literature, but there is no agreement regarding the cause of its reputed superiority over morphine. It is said to produce less nausea and vomiting and to give less respiratory depression,² presumably owing chiefly to the narcotin present. It is advocated for the relief of renal colic³ because of the relaxation of ureteral tonus produced by the papaverine present. Macht and his associates, in a study of cutaneous pain, reported that Pantopon had a greater analgesic effect than an equivalent dose of morphine,⁴ while Winternitz⁵ concluded that the residual alkaloids contributed little to the analgesic action of opium. Barlow,⁶ in a study of the tranquilizing potency of morphine and other opium

alkaloids for rats, obtained no evidence "that would indicate any significant activity on the part of the residual opium alkaloids contained in Pantopon." Eggles-ton and Hatcher⁷ found that in dogs Pantopon was actually slightly more emetic than could be accounted for by the morphine content.

The usual dose of Pantopon, one-third grain (0.0216 Gm), costs the hospital twice as much as morphine sulfate, one-fourth grain (0.0162 Gm). Since Pantopon is said to contain 50 per cent of morphine hydrochloride,⁸ it might be expected that as far as its morphine content is concerned the effect of one-third grain of Pantopon would be equivalent to one-sixth grain (0.0108 Gm) of morphine sulfate. But one-third grain of Pantopon contains one-sixth grain of anhydrous morphine hydrochloride, while U S P morphine sulfate contains five molecules of water of crystallization. Therefore, on a basis of morphine alkaloid there is only about one twenty-fifth grain (0.0026 Gm) less morphine in one-third grain (0.0216 Gm) of Pantopon than in one-fourth grain (0.0162 Gm) of morphine sulfate.

We have attempted to determine whether any differences could be detected in the analgesic effects of Pantopon and morphine, either beneficial or deleterious, when these were given as objectively as possible. The plan of the experiment was to administer the drugs in varying order to patients requiring morphine, in such a manner that neither the patient nor the observer would know which drug had been given. Information was sought on two questions: (1) whether the method could detect differences in the effect of dosages of one-sixth grain (0.0108 Gm) and one-fourth grain (0.0162 Gm) of morphine sulfate, and (2) whether the effect of Pantopon differed from either dosage more than the two dosages of morphine sulfate differed between themselves. Since Pantopon tablets are brownish biconvex disks, while morphine sulfate tablets are white and flat, Prof E D Davy of the School of Pharmacy of Western Reserve University was kind enough to color tablets of morphine sulfate for us and to run Pantopon through the same tablet machine so that they were of the same shape. The tablets as used were indistinguishable in appearance. Only one of the several nurses who administered them thought she could distinguish the Pantopon by its less ready solubility. All doses were ordered by number and given hypodermically. The results were recorded on special forms by the nurse or the house officer. The drug was considered to have given complete relief if the patient was relieved of pain or asleep in half an hour, moderate relief if effective in from one-half to one hour, and no relief if the patient was still complaining or uncomfortable at the end of one hour. The effectiveness of morphine sulfate one-sixth grain (0.0108 Gm), morphine sulfate one-fourth grain (0.0162 Gm) and Pantopon one-third grain (0.0216 Gm) was compared for the relief of postoperative pain and discomfort, the pain of renal colic, pleurisy, peritonitis, facial herpes and other conditions, and for the restlessness of cardiac dyspnea and other conditions. The distribution of doses is given in the accompanying table.

It will be noted that the analgesic efficiency of one-third grain of Pantopon is practically the same as that of one-fourth grain of morphine sulfate, or, in other words, that it is not materially greater than that of its

1 Sahli Hermann Therap Monatschr 23 1 (Jan) 1909
2 Macht D I J Pharmacol & Exper Therap 7 339 (Oct) 1915

3 Macht D I J Pharmacol & Exper Therap 9 197 (Dec) 1916

4 Macht D I Herman N B and Levy C S J Pharmacol & Exper Therap 8 1 (Jan) 1916

5 Winternitz H Munchen med Wchnschr 59 853 1912

6 Barlow, O W The Tranquilizing Potency of Morphine Pantopon Codeine Papaverine and Narcotine J A M A 99 986 (Sept. 17) 1932

7 Eggles-ton Cary and Hatcher, R A J Pharmacol & Exper Therap 7 225 (Oct.) 1915

8 New and Nonofficial Remedies 1930 Chicago American Medical Association

morphine content Nausea, or nausea and vomiting, which had not been present before the use of any narcotic, occurred in one patient after one-sixth grain of morphine sulfate and in three patients after Pantopon. There was no apparent difference in the degree of respiratory depression with the three preparations. Detailed study of pulse and blood pressure changes were not made.

A striking point in the whole study was the variability of relief afforded the same patient at different times.

Distribution of Doses

	Morphine Sulfate 1/8 Grain	Morphine Sulfate 1/4 Grain	Pantopon 1/4 Grain
Postoperative	53	44	48
Pain	19	28	22
Restlessness	11	5	14
Degree of relief according to the criteria used			
	Doses	Relief	
		Complete	Moderate None
Morph sulf 1/8 grain	83	38 (45.7%)	36 9
Morph sulf 1/4 grain	77	46 (59.7%)	26 5
Pantopon 1/4 grain	84	50 (59.5%)	29 5

by the same drug as well as by the different drugs at different times. This has impressed us with the fact that the factors contributing to the condition of a patient are so complex and so variable from time to time that assay of the relative merits of two drugs is extremely uncertain unless the one shows a consistent superiority under all conditions of administration.

CONCLUSION

Blind tests confirmed that morphine sulfate one-fourth grain is more likely to give relief from pain than morphine sulfate one-sixth grain and apparently not materially more likely to produce nausea. No indications have been obtained that Pantopon one-third grain possesses any advantages over morphine sulfate one-fourth grain.

Council on Foods

THE COUNCIL ON FOODS HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORTS
FRANKLIN C. BING Secretary

Vitamin D Milk Produced by Feeding Cows Irradiated Yeast

In 1929 Wachtel¹ reported that the feeding of irradiated dried yeast to cows resulted in the secretion of vitamin D in the milk. This report was confirmed and amplified by the observations of Hart and Steenbock and their associates² at the University of Wisconsin. Later work has revealed the factors concerned in the feeding of irradiated dried yeast in order that a milk of uniform vitamin D potency might be produced. The yeast must be fed two or more times daily rather than all at one feeding. The amounts to be fed depend on the amount of milk secreted. High producing cows are more efficient than low producing cows in transferring vitamin D from the food to the milk. Since 1932 this type of vitamin D milk has been made commercially available. The product is sometimes referred to as 'metabolized' vitamin D milk. This name is one of convenience only and it is not entirely satisfactory because neither the milk nor the vitamin D has been subjected to any metabolizing process. The vitamin D appears to be imparted unchanged to the milk. The yeast feeding method is used on both 'certified' and ordinary dairy farms.

The expression "certified vitamin D milk" refers to metabolized vitamin D milk of certified grade, produced according to the Methods and Standards of the American Association of Medical Milk Commissions, Incorporated.

Numerous investigators have reported on the clinical effectiveness of metabolized vitamin D milk. Kramer,³ Wyman,⁴ Gerstenberger⁵ and Eliot⁶ and their respective co-workers showed that, if there is any difference, unit for unit, between different types of vitamin D milk, the difference is too small to be of practical significance.

Metabolized vitamin D milk is produced under the joint sponsorship of Standard Brands Incorporated and the Wisconsin Alumni Research Foundation. The irradiated dried yeast intended for use in the feeding of cows may be sold by Standard Brands Incorporated only to dairymen licensed by the Wisconsin Alumni Research Foundation. The approved feeding schedule is made a part of the license agreement and before a license is issued the dairymen must present a statement from his local health department, medical milk commission or other official milk control body to the effect that he is responsible, in good standing and qualified to produce the milk under proper conditions. The vitamin D content of the milk produced, as shown by repeated bio-assays, is not less than 400 units of vitamin D per quart. The Council voted to accept pasteurized metabolized vitamin D milk and to grant the use of the seal of acceptance to licensed dairies that conform to the Rules and Decisions of the Council. The requirements and allowable claims for metabolized vitamin D milk are the same as for other types of vitamin D milk containing 400 U. S. P. units of vitamin D per quart.⁷

MINERAL OIL IN FOODS

It is well known that liquid petrolatum is not absorbed from the gastro-intestinal tract¹ and, while it possesses many of the physical properties of edible oils, it yields no calories. Because of these properties, mineral oil is extensively used in the treatment of constipation and, to a lesser extent, in replacing fat in certain foods, chiefly mayonnaise and salad dressings, and a few other products. These special food preparations are useful in diets in which restriction of calories or of fats is required, as in the selection of foods for reducing weight, but their indiscriminate use is undesirable.

It was reported by Burrows and Farr² and by Dutcher and his collaborators³ in 1927 that mineral oil interferes with the utilization of vitamin A by experimental animals. This observation has been verified and clarified by additional reports which have since appeared in the scientific literature.⁴ Jackson found that the ingestion of mineral oil resulted in a considerable loss of vitamin A to the animal organism if the oil was administered with the source of vitamin A but not if the mineral oil were given at some other time of the day. Later reports brought out the interesting fact that different results could be expected with different sources of vitamin A. Mineral oil has a marked effect on the absorption of carotenes but has little effect on the absorption of vitamin A itself. The carotenes are provitamin A found

³ Kramer, Benjamin and Gittleman, I. F. New England J. Med. 209 906 (Nov. 2) 1933.

⁴ Wyman, E. T., Eley, R. C., Bunker, J. W. M. and Harris, R. S. New England J. Med. 212 257 (Feb. 7) 1935.

⁵ Gerstenberger, H. J., Horesh, A. J., Van Horn, A. L., Kraus, W. E. and Bethke, R. M. Antirachitic Cows Milk J. A. M. A. 101 816 (March 9) 1935.

⁶ Eliot, Martha M., Nelson, E. M., Barnes, D. J., Browne, Florence A. and Henss, Rachel M. J. Pediatr. 9 358 (Sept.) 1936.

⁷ The Present Status of Vitamin D Milk. Report of the Council on Foods J. A. M. A. 108 206 (Jan. 16) 1937.

¹ Mineral oil can be absorbed to a slight extent as shown by Channon, H. J., and Collinson, G. A. The Unsaponifiable Fraction of Liver Oils V. The Absorption of Liquid Paraffin from the Alimentary Tract in the Rat and the Pig Biochem. J. 23 676-688 (No. 4) 1929.

² Burrows, M. T. and Farr, Wanda K. The Action of Mineral Oil per Os on the Organism Proc. Soc. Exper. Biol. & Med. 24 717 (April) 1927.

³ Dutcher, R. A., Ely, J. O. and Honeywell, H. E. Vitamin Studies. V. Assimilation of Vitamins A and D in Presence of Mineral Oil Proc. Soc. Exper. Biol. & Med. 24 953 (June) 1927.

⁴ Rowntree, Jennie I. The Effect of the Use of Mineral Oil upon the Absorption of Vitamin A J. Nutrition 3 348 (Jan.) 1931. Jackson, R. W. The Effect of Mineral Oil Administration upon the Nutritional Economy of Fat Soluble Vitamins. II. Studies with the Vitamin A Factor of Yellow Corn ibid. 1 171 (July) 1931. Mitchell, Helen S. Influence of Mineral Oil on Assimilation of Vitamin A from Sera. Proc. Soc. Exper. Biol. & Med. 31 231 (Nov.) 1933. Jackson, R. W. The Effect of Mineral Oil Administration upon the Nutritional Economy of Fat Soluble Vitamins. I. Studies with the Vitamin A of Butter Fat J. Nutrition 7 607-617 (June) 1934.

¹ Wachtel, N. Munchen med. Wchnschr. 76 1513 (Sept. 6) 1929.
² Hart, E. B., Steenbock, Harry, Kline, O. L. and Humphrey, G. C. J. Biol. Chem. 86 143 (March) 1930. Steenbock, Harry, Hart, E. B., Hanning, Flora and Humphrey, G. C. J. Biol. Chem. 88 197 (Aug.) 1930.

in plant tissues and they are hydrocarbons, while vitamin A, which is derived from animal sources, is a complex alcohol Dutcher⁵ has suggested that the hydrocarbons of the unassimilated mineral oil in the intestine possess a greater solvent effect on the carotenes than on vitamin A.

It is apparent that liquid petrolatum would be a poor vehicle for vitamin A and particularly for provitamin A, and its use in this connection could not be countenanced. On the other hand, it appears that in the amounts usually prescribed (15 cc. from one to three times daily for adults) and under the conditions which should be observed (not to be taken at mealtime), the effect of liquid petrolatum on the absorption of vitamin A of the human diet probably is of little consequence. When incorporated in foods, however, so that the mineral oil is taken at mealtime, it is obvious that there is danger of interference with the absorption of the fat soluble vitamins. Further, the indiscriminate use of foods containing mineral oil by persons who have loose bowels might cause further looseness and thus interfere with the utilization of other vitamins and minerals.

The Council therefore advises strongly against any indiscriminate dosage of mineral oil either alone or incorporated in special foods. Those food products containing mineral oil will be considered for acceptance as special items with limited usefulness to be taken under the direction of a physician.

ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COUNCIL ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION AND WILL BE LISTED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED

FRANKLIN C. BING, Secretary

MEYENBERG EVAPORATED GOAT MILK

Manufacturer—Meyenberg Milk Products Company, Salinas, Calif.

Description—Canned evaporated goat milk.

Manufacture—Fresh goat milk is inspected, weighed, sampled, filtered, standardized to the desired ratio of fat to solids, evaporated in vacuo at 49° C., homogenized at 2,500 pounds pressure, cooled to 10° C., standardized for total solids, and mechanically filled into cans which are sealed and processed according to the procedure usual for evaporated cow's milk. The equipment used during the entire process is made from stainless steel and glass. Milk is produced in accordance with the regulations of the state of California.

Analysis (submitted by manufacturer)—Moisture 75.7%, total solids 24.3%, ash 1.6%, fat (ether extract) 7.2%, protein ($N \times 6.25$) 8.0%, sucrose none, lactose 8.4%.

Calories—1.3 per gram 37 per ounce

WATKINS BRAND FREE RUNNING TABLE SALT, IODIZED

Manufacturer—The Watkins Salt Company, Watkins Glen, N. Y.

Description—Granulated table salt containing magnesium carbonate (1 per cent) as a caking inhibitor and potassium iodide (0.02 per cent).

Manufacture—Brine, obtained by returning water pumped into the salt veins by drilled wells, is treated with milk of lime, preheated and stored to permit the settling of insoluble matter. The solution is filtered and evaporated. The resulting salt is washed in brine, dried and screened for size. Definite amounts of potassium iodide and magnesium carbonate are added and the salt automatically is packed in cartons.

Analysis (submitted by manufacturer)—Moisture 0.1%, total solids 99.9%, sodium chloride ($NaCl$) 98.5%, magnesium carbonate ($MgCO_3$) 1.0%, calcium sulfate ($CaSO_4$) 0.34%, calcium chloride ($CaCl_2$) 0.04%, potassium iodide (KI) 0.02%, iron and aluminum oxides nil, calcium carbonate ($CaCO_3$) nil, magnesium sulfate nil, magnesium chloride nil.

VALORA BRAND LEMON JUICE 100% PURE

Manufacturer—Santa Barbara Citrus Juice Company, Inc., Orange, Calif.

Description—Canned, pasteurized California lemon juice practically equivalent to fresh lemon juice in vitamin C content.

Manufacture—Selected tree-ripened fruit is washed, inspected, automatically cut in halves and reamed by hand. The juice is strained, deaerated, vacuum filled into cans, vacuum sealed, pasteurized and immediately cooled.

Analysis (submitted by manufacturer)—Moisture 90.5%, total solids 9.5%, ash 0.34%, fat (ether extract) 0.1%, protein ($N \times 6.25$) 0.5%, reducing sugars (as invert) 1.9%, sucrose 0.14%, crude fiber 0.03%, carbohydrates other than crude fiber (by difference) 2.6%, titratable acidity as citric acid 5.95%, pH 2.37, vitamin C (titration) 44 mg per 100 cc (900 International units).

Calories—0.1 per gram 3 per ounce

Vitamins—A rich source of vitamin C

SEXTON BRAND FRUIT FOR SALAD, WATER PACKED

Manufacturer—John Sexton & Company, Chicago

Description—Canned apricots, pears, peaches, pineapple and cherries, packed in water.

Manufacture—Apricots fully tree ripened are inspected, washed, graded, cut, pits removed, again sorted and graded for ripeness. Bartlett pears are graded, ripened, peeled, cut, stemmed, cored, inspected, immersed in brine solution and washed. Yellow cling peaches fully tree ripened are mechanically cut, pitted, lye peeled, washed, inspected, graded for size and washed. Fancy sliced pineapple packed in juice and Maraschino cherries without added sugar are purchased. Fruit is assembled, washed and filled into cans in proper proportions which are inspected, filled with water, exhausted, sealed and processed.

Analysis (submitted by manufacturer)—(Analysis of entire contents including liquid) moisture 90.3%, total solids 9.7%, ash 0.22%, fat (ether extract) 1.0%, protein ($N \times 6.25$) 0.4%, crude fiber 0.34%, carbohydrates other than crude fiber (by difference) 7.8%.

Calories—0.41 per gram 12 per ounce

Claims of Manufacturer—For diets in which sweetened fruit is proscribed.

LIBBY'S HAWAIIAN PINEAPPLE

FANCY GRADE (1) SLICES (2) TIDBITS (3) LONG SLICES (4) DELUXE STYLE (5) CRUSHED

Manufacturer—Libby, McNeill & Libby, Honolulu, Hawaii

Description—Canned Hawaiian pineapple, cut in various styles, packed in syrup: (1) Slices cut crosswise of the pineapple, (2) machine cut tidbits, (3) slices cut lengthwise of the pineapple, (4) large, irregular machine cut tidbits, (5) broken slices and fruit from the inside of the shell, crushed.

Manufacture—Mature Hawaiian pineapples are mechanically peeled, cored and trimmed. The cylinders of fruit are hand trimmed, machine cut, graded and filled into cans which are subjected to vacuum pressure, filled with syrup, sealed and processed.

Analysis (submitted by manufacturer)—Moisture 74.1% to 75.2%, total solids 24.8% to 25.9%, ash 0.3% to 0.4%, fat (ether extract) 0.09% to 0.15%, protein ($N \times 6.25$) 1.0%, reducing sugar as invert sugar 9.9% to 13.0%, sucrose 7.7% to 9.6%, crude fiber 0.07% to 0.09%, carbohydrates other than crude fiber (by difference) 23.3% to 24.3%, iron (Fe) 0.56 to 1.06 mg per hundred grams, and copper (Cu) 0.15 to 0.24 mg per hundred grams.

Calories—0.9 per gram 25 per ounce

Vitamins—The results of biologic assay submitted by the manufacturer indicate the following vitamin content: International units per hundred grams: vitamin A 44, vitamin B₁ 12, vitamin C sliced pineapple and tidbits 210 to 245, crushed pineapple 140 to 175, Sherman Bourquin units of vitamin G per hundred grams, 10.

⁵ Dutcher, R. A., Harris, P. L., Hartzler, E. A., and Guerrant, N. B. Vitamin Studies. XIX. The Assimilation of Carotene and Vitamin A in the Presence of Mineral Oil. *J. Nutrition* 5: 269 (Sept.) 1934.

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SATURDAY, NOVEMBER 27, 1937

PRINCIPLES AND PROPOSALS OF THE COMMITTEE OF PHYSICIANS

The Board of Trustees has especially authorized publication of the following statement

Following the publication of the report of the American Foundation Studies in Government, a small group of physicians, assembled in New York, developed certain principles and proposals which have since been circulated by a self-appointed Committee of Physicians among the medical profession of the United States, with a view to obtaining signatures in their support. During a period of approximately six months, some 430 medical men have apparently permitted the use of their names. Early in November the self-appointed group of physicians released to the press for Sunday, November 7, a statement of principles and proposals to which the names of the 430 signers were affixed. The newspapers generally heralded this action as a revolt against the American Medical Association, in a great majority of the cases indicating that there was a revolt in behalf of "state medicine." The publication of this manifesto and the attached signatures has been heralded with glee by many of those who have been opposing the American Medical Association in behalf of cooperative practice, sickness insurance, and various fundamental changes in the nature of the practice of medicine. Within the last week another series of proposals has come from another self-appointed group requesting signatures of physicians. This series of proposals includes the suggestion for enabling legislation for sickness insurance.

The American Medical Association is an organization of physicians along strictly democratic lines. Representatives of county medical societies send delegates to state medical societies and these, in turn, send their delegates to the House of Delegates of the American Medical Association. It is possible for any physician, through his delegate, to obtain consideration of any proposal which he may wish to bring to the attention of the House of Delegates. At the Atlantic City session the delegates from New York State presented these principles and proposals, slightly modified, as an action

of the House of Delegates of the Medical Society of the State of New York. They were carried before a reference committee and, in several sessions of that reference committee, considerable numbers of physicians presented arguments for and against their adoption. The House of Delegates, however, after thorough consideration of the report of the reference committee, and with full cognizance of the method of development of these principles and proposals, and of the considerations which were involved in their passage by the House of Delegates of the Medical Society of the State of New York, did not accept them. The House of Delegates did, however, point out the willingness of the medical profession to do its utmost today, as in the past, to provide adequate medical service for all those unable to pay either in whole or in part.

Why, then, any necessity for the circulation of petitions presenting proposals for fundamental changes in the nature of development, distribution and payment for medical service? Is there a well designed plan to impress the executive and legislative branches of our government with the view that the American medical profession is disorganized, distrustful of its leaders, undemocratic in its action and opposed to the best interests of the people? Who may profit from such evidence of disorganization? Is there any evidence that the self-appointed Committee of Physicians and the 430 physicians who have affixed their names to these principles and proposals are any better able to represent the opinion of the American medical profession than the democratically chosen House of Delegates of the American Medical Association—one of the most truly representative bodies existing in any type of organized activity in this country today?

The House of Delegates has given its mandate to the Board of Trustees, to the officers and to the employees of the Association. That mandate opposes the principles and proposals emanating from the Committee of Physicians, and equally the new proposals. If the House of Delegates sees fit to depart from the principles now established, it will be the duty of the Board of Trustees, the officers and the employees of the American Medical Association to promote such new principles as the House of Delegates may establish. Until, however, the regularly chosen representatives of the 106,000 physicians who constitute the membership of the American Medical Association (now the largest membership in its history) determine, after due consideration, that some fundamental change or revolution in the nature of development, distribution and payment for medical service in the United States is necessary, physicians will do well to abide by the principles which the House of Delegates has established. They will at the same time deprecate any attempts inclined to lead the executive and legislative branches of our government, as well as the people of the United States, into the belief that the American medical profession is disorganized.

Members of the medical profession, locally and in the various states, are ready and willing to consider, with other agencies, ways and means of meeting the problems of providing medical service and diagnostic laboratory facilities for all requiring such services and not able to meet the full cost thereof. The American Medical Association has reaffirmed its willingness on receipt of direct request to cooperate with any governmental or other qualified agency and to make available the information, observations and results of investigation, together with any facilities of the Association. Thus far, no call has come from any governmental or other qualified agency, for the cooperation of the American Medical Association in studying the need of all or of any groups of the people for medical service, to determine to what extent any considerable proportion of our public are actually suffering from lack of medical care. The offer still stands as evidence of the willingness of the American Medical Association to aid in finding a solution to any or all of the problems in the field of medical care that now prevail.

PREVENTION AND TREATMENT OF MEASLES

The use of convalescent or adult serum in the prevention of measles has been known so long that recent reports serve largely to corroborate previous investigations. Fleming¹ has recently reported an epidemic of measles in a school of 300 boys, in which treatment by adult serum was employed. The term started on January 15, and on January 17 a boy was admitted to the school sanatorium with measles, by February 14 serum was given to all who were susceptible. In the end, seventy of the eighty-five patients with measles were treated with serum. They fell into three groups: 1. To fifteen patients serum was not given, they included the original case and one boy who was reported to have had measles as a child. The average period of fever for this group was 82 days. Complications included one severe case of bronchopneumonia and two cases of middle ear infection. 2. Twenty patients were given serum during incubation. These had an average fever period of 65 days. There were four cases of middle ear inflammation. 3. Finally there were fifty patients to whom serum was given before infection. In these patients the average fever period was 52 days and there were no complications. Fleming concluded therefore that the adult serum had a definite effect in attenuating the disease and in decreasing the incidence of complications but that there was no evidence in this epidemic of any true temporary immunity resulting from the use of the serum.

Hardgrove and his co-workers² recently reported complete protection for 82 per cent of measles contacts

receiving convalescent serum and for 64 per cent of those receiving less than the recommended amount. The serum also appears to have some therapeutic value. The serum is weakened somewhat after one year but retains enough potency to be of use when given in large amounts. Furthermore, they believed that pooled normal serum can be used for the same purpose as convalescent measles serum if large doses are administered. These studies seem to confirm the general impression that convalescent serum is of value in the attenuation of measles. It seems likely that normal adult serum is not as powerful as convalescent serum in this respect, and if Fleming had been able to use the convalescent serum or larger quantities of the adult serum he might have had complete suppression of the measles rather than attenuation. Dosages, however, still have to be standardized and probably depend on several factors, including the source of the serum.

In recent years the use of placental extract in the prevention and modification of measles has also received considerable attention, owing partially at least to the expense and difficulty of obtaining satisfactory convalescent or even normal serum. Thus McKhann and Chu³ reported a series of observations which indicated that placental protein extracts can be prepared and, when given by intramuscular injections to susceptible patients early in the period of incubation, result either in protection or in attenuation. In a more recent paper McKhann⁴ states that the dosage of placental extract necessary is influenced by several factors, including potency, time of administration, age and size of the patient and degree of exposure. In some instances, intramuscular administration is followed by local or general reactions, but such reactions are severe only relatively rarely. Sensitizations to subsequent injections of placental extract have not been found. The immunity following the placental extract is passive in type and of short duration. Thus observations of fifty-four children reexposed to measles within a few weeks after receiving placental extract indicate that the immunity resulting from the injection is insufficient to protect against reexposure occurring more than two weeks after administration.

Montgomery,⁵ using immune globulin of placental origin, attempted to prevent or modify measles in children who were patients in a cross-infected ward. Suggestive but undiagnosable mild attacks of fever occurred after the original contact, but thirty-three days after the original case a child developed a typical attack of measles, although it had received the immune globulin. These observations would seem to indicate that passive immunity resulting from 10 cc doses of

1 Fleming Sir K. L. The Use of Adult Serum in Measles. *Brit. M. J.* 2: 612 (Sept. 25) 1937.

2 Hardgrove Maurice, Schwartz A. B. and King Louise F. Merle. The Use of Convalescent Serum in the Prevention, Modification and Treatment. *Wiscon. M. J.* 36: 817 (Oct.) 1937.

3 McKhann C. F. and Chu F. T. Use of Placental Extract in Prevention and Modification of Measles. *Am. J. Dis. Child.* 15: 475 (March) 1933.

4 McKhann C. F. Immunologic Application of Placental Extract. *New England J. Med.* 216: 450 (March 18) 1937.

5 Montgomery Alice K. Immune Globulin (Human) Lederle in the Prevention of Measles. *Glasgow M. J.* 10: 89 (Sept.) 1937.

immune globulin is of fairly short duration. This view is similar to that held by McKhann and others. The possibilities resulting from the apparent certainty that both immune serum and placental extract can produce definite although temporary immunity to measles is significant and encouraging in view of the knowledge that measles is much more serious than is generally recognized. Certainly these facts open new possibilities for the identification of a chemical principle of high immunizing power.

CALCIUM AND BLOOD COAGULATION

The enormous literature on the phenomenon of the clotting of blood attests vigorous investigative activity. William Hewson¹ wrote in 1770 of his observation that coagulation could be influenced by salts of various kinds. During the middle years of the nineteenth century active investigation resulted in the discovery that serum contained an organic substance, which could also be extracted from blood clots, that had the power of initiating the coagulation of blood and of various ordinarily incoagulable body fluids. Alexander Schmidt showed in 1872 that inorganic salts had an essential part in the process of clotting. The view that calcium assumes a peculiar role in blood coagulation appears to have arisen with Hammarsten, who vigorously championed the specific nature of its action. Most workers accept the requirement of calcium as constituting a link in the chain of events ending in the formation of the fibrin clot but at present there is a question regarding the point at which this element exerts its influence.

The essential features of the various modern theories of coagulation include a proteim called prothrombin as a normal constituent of the blood. This is changed to thrombin directly or indirectly by a substance (kinase) contained in tissue fluids and platelets, when calcium is present. The resulting thrombin brings about a change of the fibrinogen, ordinarily present in blood, to fibrin, which is the basis of the clot. The point at which calcium acts is in the change of prothrombin to thrombin. Whether it acts merely as a catalyst or actually becomes part of the thrombin, essential for its action, has been the subject of much controversy. Ferguson² has introduced a new factor into the general conception. Using carefully prepared prothrombin and cephalin (kinase) with calcium chloride, he produced thrombin the activity of which was tested on solutions of purified fibrinogen. To test for the presence of calcium in the thrombin, the latter was subjected to decalcification by oxalate or citrate or by dialysis before it was permitted to act on the fibrinogen. Thrombin can lose calcium to the extent of failure to clot the fibrinogen solution if the decalcification is carried out soon after the formation of the thrombin. If the thrombin is allowed to "age" for several hours

before decalcification is attempted, the loss of the calcium no longer prevents clotting. Thus there seems to be a "calcium-containing intermediate complex" which changes to stable thrombin.

An important deduction of the foregoing observations is that the action of the decalcifying anticoagulants is rather more complex than ordinarily conceived; they may prevent clotting by actually precipitating ionized calcium before thrombin has been formed or they may compete with thrombin for the calcium and, if the thrombin-calcium complex is newly formed, will interfere with coagulation by withdrawing the calcium from the complex. These studies have added new details to a commonplace but highly intricate and important vital phenomenon, from such effort with experimental models may come significant improvements in the technic of transfusion.

Current Comment

THE FOURTH OF JULY RECORD

On page 1806 of this issue of THE JOURNAL appears a brief summary of 1937 Fourth of July fireworks injuries. This continues after a lapse of twenty-one years, those summaries which the American Medical Association published from 1903 to 1916 inclusive. Their renewal is necessitated by the unfortunate increase that has since occurred. Fireworks are again a serious menace to life and health. Their control must originate in the respective state legislatures, to be adequate, laws must be enacted by contiguous states. This matter should receive the immediate attention of lawmakers in the attempt to avoid or minimize totally unnecessary deaths and injuries on Independence Day, 1938.

RABIES IN ALABAMA

In Alabama, according to a recent report,¹ it has been impossible to institute or enforce effective measures for controlling rabies in dogs. As a result, the manufacture and distribution of antirabies vaccine has become an expensive and tedious problem of public health administration. From January 1922 to August 1936, 9,282 animals received a positive laboratory diagnosis of rabies. During this period 34,864 individuals were given the antirabies vaccine and forty-two persons died of the disease. There has been a six-fold increase in the incidence of the disease among animals during this period, the fact that human mortality has been maintained at a low rate is apparently due only to the increase in administration of vaccine. Of the forty-two persons who died from rabies, twenty-one had received antirabies vaccine and twenty-one had not. Among the twenty-one persons receiving vaccine who died, treatment for twenty began within six days after exposure and in one after three weeks. The short incubation period of from two to four weeks in thirteen treated

¹ Hewson, William. The Works of William Hewson FRS. Sydenham Society, 1846, pp. 190.
² Ferguson, J. H. Am J Physiol 119: 755 (Aug) 1937.

¹ Demison, G. A., McAlpine, J. G., and Gill, D. G. Rabies in Alabama. Am J Pub Health 27: 869 (Sept) 1937.

and nine untreated cases indicates that the degree of infection was such that vaccine could hardly have been expected to save many of these patients. Among the treated, 9,800 received Pasteur treatment with a mortality of 0.11 per cent. Since 1930, 25,064 received Semple treatments with ten deaths, or a mortality of 0.04 per cent. These returns, it was pointed out, compare favorably with the larger series reported by McKendrick² in his League of Nations Analytical Reviews.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ALABAMA

Meeting of Urologists—The annual meeting of the South-eastern Branch Society of the American Urological Association was held at Birmingham, November 5-6. The following program was presented:

- Drs. Henry W. E. Walther and Robert M. Willoughby, New Orleans: Hormonal Treatment of Benign Prostatic Hypertrophy.
- Dr. Gershom J. Thompson, Rochester, Minn.: Clinical Data Concerning Prostatic Resection.
- Dr. Edwin P. Alyea, Durham, N. C.: Cystoscopic Removal of Large Ureteral Calculi by Modification of the Usual Manipulative Methods.
- Dr. John A. C. Colston, Baltimore: Sulfanilamide (Prontylin) in the Treatment of Genito-Urinary Infections.
- Dr. Nels F. Ockerblad, Kansas City, Mo.: Surgery of the Human Ureter.
- Dr. Clyde Leroy Deming, New Haven, Conn.: Future of Unilateral Nephrectomized Patients.
- Dr. Owsley Grant, Louisville, Ky.: Obstruction at the Vesical Neck in Children.
- Dr. James J. Ravel, Charleston, S. C.: Extravasation from the Lower Urinary Tract.

CALIFORNIA

Plague Infection—According to *Public Health Reports*, October 29, plague infection has been demonstrated in pools of fleas and in pooled tissue and organs taken from rodents in California as follows: In Fresno County, a pool of 111 fleas from twenty-seven fisher's squirrels, eighty-four fleas from 151 golden mantled squirrels, forty-eight fleas from 139 chipmunks and twenty-seven fleas from ten chuckaree (red) squirrels, received at the state department of health laboratory on September 21; a pool of forty-eight fleas from 139 chipmunks and eleven fleas from seventeen chipmunks collected on September 20; a pool of organs from three beechey's squirrels shot on September 14, and a pool of organs from nine golden mantled squirrels collected October 2. In Placer County, plague infection was demonstrated in pooled tissue from seven beechey's squirrels, five chipmunks, two wood rats, two alexandrinus rats and three golden mantled squirrels received at the laboratory October 1.

COLORADO

Annual Hospital Meeting—The Colorado Hospital Association held its thirteenth annual meeting at the Cosmopolitan Hotel, Denver, November 9-10. The speakers included Drs. Paul J. Connor and Roy L. Cleere, president and secretary, respectively, Colorado State Board of Health, Denver, on 'The Future of the Hospital and the Doctor' and 'Future Relations Between Hospitals and the Public Health Agencies'; Robert E. Neff, Iowa City, president, American Hospital Association, 'Patients and Patience'; and Dr. William B. Draper, Denver, 'Facts and Fallacies of Oxygen Administration'.

Midwinter Clinics—The annual midwinter graduate clinics of the Colorado State Medical Society will be held in Denver December 15-17 at the Shirley-Savoy Hotel with the Medical Society of the City and County of Denver acting as host. Guest speakers will include:

- Dr. Herman L. Kretschmer, clinical professor of genito-urinary surgery, Rush Medical College, Chicago.
- Dr. A. Craeme Mitchell, B. K. Rachford, professor of pediatrics, University of Cincinnati College of Medicine.

² McKendrick, A. G. First to Sixth Analytical Review of Reports from 14 tour institutes on the results of Antirabies Treatment. *Quart. Bull. Health Organ. League of Nations*, Geneva, August 1930 to December 1935.

Dr. Robert D. Schrock, professor of orthopedic surgery, University of Nebraska College of Medicine, Omaha.
Dr. Albert J. Brown, professor of surgery at the University of Nebraska College of Medicine, Omaha.
Dr. Don C. Sutton, associate professor of medicine, Northwestern University Medical School, Chicago.

Clinics will be conducted in the mornings at the Colorado General, Children's General and Denver General hospitals.

CONNECTICUT

Laboratory Pneumonia Service Extended—On October 1, the bureau of laboratories of the state health department began typing for types I, II, IV, V, VI, VII, VIII and XIV. When the retrenchment program for the bureau was put into effect, pneumonia typing was restricted to types for which therapeutic antisera were available. Since then antisera for three additional types have been marketed and the laboratories have extended the typing service to include them. Should other therapeutic antisera become available to physicians, the laboratories will attempt to test for the specific types involved, the *Connecticut Health Bulletin* announces.

Public Health Day—The Connecticut Public Health Association has designated the day of its winter meeting, December 1, in Hartford, as "public health day." A conference for health officers, planned by the state department of health, has been arranged for a morning session. Features of the afternoon program will include a discussion of the state cancer control program by Dr. Charles L. Larkin, Waterbury, and a symposium on the treatment and control of pneumonia with the following speakers: Dr. John A. Wentworth, Hartford, Irma E. Reeve, R.N., New Haven, Dr. Mario L. Palmieri, Middletown, Dr. Millard Knowlton, Hartford, and Friend Lee Mickle, D.Sc., Hartford.

DISTRICT OF COLUMBIA

Society News—Dr. Arthur M. Shipley, professor of surgery, University of Maryland School of Medicine, Baltimore, addressed the Washington Academy of Surgery, October 8, on 'Surgery of the Biliary Duct Apparatus.' The academy will be addressed December 10 by Dr. Isaac A. Bigger, Richmond, Va., on 'Surgery of the Heart and Pericardium.'

Symposium on Sulfanilamide—The Academy of Medicine of Washington devoted its fall meeting November 17 to a symposium on sulfanilamide. Dr. Eli K. Marshall, Jr., Baltimore, discussed 'Certain Phases of the Pharmacology of Sulfanilamide'; Dr. Sanford M. Rosenthal of the National Institute of Health, 'Sulfanilamide and Related New Compounds in Experimental Infections'; and Dr. Frederick A. Reuter, clinical professor of urology, George Washington University School of Medicine, 'New Work with Sulfanilamide in Clinical Urology.'

ILLINOIS

Retires as Director of Laboratories—Howard J. Shaugnessy, Ph.D., has resigned as director of the division of laboratories of the Illinois State Department of Health, Springfield, to become associate professor of bacteriology and public health at the University of Colorado School of Medicine, Denver. Dr. Shaugnessy has held the position with the Illinois department since 1931.

Society News—Dr. Frederick B. Moorehead, Chicago, discussed 'The Use of Plastic Traction in Jaw Fractures' before a joint meeting of the Sangamon County Medical Society and the G. V. Black District Dental Society in Springfield, November 4.—Dr. Philip Thorek, Chicago, discussed 'The Direct and Differential Diagnosis of Acute Gallbladder Disease' before the De Witt County Medical Society at Clinton, October 20.—Drs. Ralph M. Tyson and Chevalier L. Jackson, Philadelphia, discussed 'Diagnosis and Treatment of Foreign Bodies in the Respiratory Tract' before the Peoria City Medical Society in Peoria, November 16. At a meeting of the society, November 2, Drs. Harry Costeff and Julius Steinfeld, Peoria, discussed 'Insulin Shock and Other Methods of Therapy in Schizophrenia'.—Dr. Paul H. Harmon, Springfield, discussed 'Anterior Poliomyelitis' before the Madison County Medical Society, November 5.

Chicago

University News—Loyola University School of Medicine has annexed the dispensary and outpatient clinical facilities of Mercy Hospital, 2536 Calumet Avenue, to supplement the overcrowded clinics at the medical school. Dr. John G. Powers has recently been officially appointed assistant dean of the medical school.

Society News—At a joint meeting of the Chicago Orthopaedic Society and the Chicago Roentgen Society, November 12, the speakers were Drs Daniel H Levinthal and Hollis E Potter on "Benign Tumors of Bone—Diagnosis and Treatment" and "Roentgenological Aspects of Low Back Pain" respectively—Dr Charles B Huggins, among others, addressed the Chicago Urological Society November 18 on "Treatment of Tuberculous Wounds Following Nephrectomy"

Book Fair for Benefit of Medical School—The Women's Faculty Club of Northwestern University Medical School is sponsoring a book fair, December 2-4, and a book ball Saturday evening, December 4, for the benefit of the medical school clinics. The book fair will be held on the Chicago campus of the university and the ball in the Knickerbocker Hotel. The fair will consist of a display of rare books, prints, fine bindings, valuable first editions, original manuscripts of famous authors, new and used volumes, periodicals, magazines, lithographs, water-color paintings, Christmas cards, gifts and novelties. There will be an author's tea Friday afternoon and lectures Thursday including one by Mrs Arthur Byfield on "Adventuring Down the Menu." Saturday there will be a "children's day celebration" in Thorne Hall. Costumes will be optional at the ball, although it is suggested that those attending appear as characters from the printed page. Additional information may be obtained from Mrs Gerard Krost, 6900 Paxton Avenue, Chicago, telephone Hyde Park 2882.

INDIANA

Society News—Arrangements have been completed to hold all business and dinner meetings of the Indianapolis Medical Society on the third floor of the Indianapolis Athletic Club each Tuesday evening in the future—The Northeastern Indiana Academy of Medicine was addressed at Kendallville, October 28, by Drs Arthur E Mahle, Chicago, on "Recent Advances in Medical Management of Peptic Ulcer"

Gifts to Medical School Library—Dr William N Wishard Sr, for many years professor of genito-urinary surgery, Indiana University School of Medicine, Indianapolis, has given a collection of pictures to the library of the university's medical center. The collection includes a photograph of the nine men who composed the last faculty of the medical college that was organized in Indianapolis in 1869 and which was combined with the College of Physicians and Surgeons in 1878 to form the Medical College of Indiana, and other photographs of interest in the development of the medical school. About seventy-five medical books were also given to the library by Drs George C Fisher and Edwin S Knox, both of Indianapolis.

LOUISIANA

Society News—The Tri-Parish Medical Society was addressed at Tallulah October 5 by Drs Harold G F Edwards and Edgar L Sanderson, both of Shreveport, on "Cancer Is Curable" and "Treatment of Indigent Patients in the Future," respectively—Dr Tom Spec Jones, Baton Rouge discussed "Typhus Fever" before the Bi-Parish Medical Society October 6—A symposium on syphilis was presented before the Orleans Parish Medical Society, New Orleans, November 8 by Drs John G Menville, Edgar Hull, James K Knowles, John R Schenken and John A Trautman.

MARYLAND

Personal—Dr Paul Cohen has been named superintendent of the Eastern Shore Branch, Maryland Tuberculosis Sanatorium, Salisbury, succeeding the late Dr Charles D Steenken—Dr Harry Friedenwald, Baltimore, has been made an honorary fellow of the Jewish Academy of Arts and Sciences.

Society News—The Baltimore City Medical Society held a joint meeting with the Medical Society of the District of Columbia in Baltimore, November 19. The speakers were Drs Charles R L Halley, Washington, D C, on "Typhoid Types of Fever, Frequency and Problems of Diagnosis," Edgar W Davis, Washington, D C, "Endobronchial Tumors: Diagnosis and Treatment," and Arthur C Christie, Washington, D C, "Recent Advances and Trends in Radiology." The Baltimore society was addressed November 5, among others, by Drs Harvey G Beck and George M Suter on "The Role of Carbon Monoxide in the Etiology of Myocardial Disease."

Syphilis Control Activities—With the election of Dr Harry M Robinson, Baltimore, as permanent chairman, October 21, formal activities of the state's syphilis control program were instituted. Two statewide committees to carry on the program were approved, according to the Baltimore Sun. The committee on legislation will be headed by State Senator Raymond E Kennedy, and the committee on medical facilities

will be headed by Dr Joseph Earle Moore, director of the syphilis clinic of Johns Hopkins Hospital. Seven subcommittees will work under Dr Moore, covering epidemiology, dispensaries, libraries, hospitalization, neurosyphilis, syphilis in Negroes, and prenatal and congenital syphilis, while five subsidiary committees will be named to represent sections of the state. A survey to determine the extent of and facilities for the treatment of syphilis will be made. The deadline for the study will be February 1, when the material gathered will be incorporated into a report for the governor for legislative action.

MASSACHUSETTS

Society of Physical Therapy Changes Name—At a recent meeting in Boston the New England Physical Therapy Society changed its name to the New England Society of Physical Medicine. Dr Robert T Phillips, Boston, addressed the meeting, November 17, on "Practical Physical Medicine for Chronic Arthritis."

Personal—Dr George D Dalton, Quincy, has been appointed medical examiner of Norfolk County, succeeding the late Dr Frederick E Jones, who held the post for almost forty years—Dr Rowland Godfrey Freeman Jr, New York, has been appointed assistant psychiatrist of the Judge Baker Guidance Center, Boston.

MICHIGAN

Interns' Case History Contest—The East Side Physicians' Association agreed at a meeting October 21 to sponsor a contest for the best case history written this year by a first year intern of an East Side Detroit hospital, according to *Detroit Medical News*. Prizes of \$100, \$50 and \$25 respectively will be offered for the best three papers submitted.

Society News—At a meeting of the East Side Physicians' Association, Detroit, November 18, the speakers were Drs Robert B Kennedy and Robert L Schaefer on "Causes and Treatment of Sterility" and "Clinical Indications for Anterior Pituitary-like Sex Hormones" respectively—The Washtenaw County Medical Society was addressed November 9 by Drs Arthur C Curtis, on sulfanilamide, Russell W DeJong, benzedrine, and Jerome W Conn, protamine zinc insulin. All are of Ann Arbor—Dr Maurice B Visscher, Minneapolis, addressed the medical section of the Wayne County Medical Society, Detroit, November 8, on "Physiological Principles of Importance in Heart Failure and Its Treatment." Dr Andrew C Ivy, Chicago, discussed jaundice before the society, November 15—Dr Ward F Secley, Detroit, discussed "Heart Disease in Pregnancy" before the Calhoun County Medical Society, Battle Creek, November 2—Dr Joseph L Baer, Chicago, addressed the Detroit Gynecological Society, November 2, on "The Cervix in Obstetrics and Gynecology."

Director of New Hospital Commission Appointed—Dr Joseph E Barrett, Taunton, Mass., has been appointed director of the State Hospital Commission of Michigan, created by the last legislature under a law effective October 29, to supervise and control all state mental hospitals. Dr Theophile Raphael, Ann Arbor, has been appointed to the commission, the only physician member at the time of the report. Dr Leo G Christian, Lansing, chairman of the legislative committee Michigan State Medical Society, was also appointed but resigned before the commission held its first meeting November 10. Dr Barrett graduated at the University of Tennessee School of Medicine in 1922 and served at the State Hospital for Nervous Diseases, Little Rock, Ark., from 1923 to 1928 when he was appointed assistant superintendent of the Taunton State Hospital. In 1931 he was made assistant to the commissioner in the Massachusetts Department of Mental Diseases and in 1934 assistant commissioner. Since resigning from the Massachusetts department in June 1937 he has made surveys of state hospitals in Iowa and Virginia for the National Committee for Mental Hygiene.

MINNESOTA

Personal—Dr Edward J Engberg, St Paul, has been appointed superintendent of the Minnesota School for Feeble-minded, Faribault, to succeed Dr James Moorhead Murdock, retired—Dr Gilbert G Cottam, Minneapolis, editor of the *Bulletin* of the Hennepin County Medical Society, has been appointed assistant editor of *Minnesota Medicine*, succeeding Dr Chauncey A McKinlay, resigned.

Society News—Dr Thomas A Peppard, Minneapolis, discussed "Symptomatology of the Various Leukemic States," and Dr Owen H Wangenstein, Minneapolis, "Importance of Immobilization and Posture in the Treatment of Acute Infections of the Extremities" before the Minnesota Academy of

Medicine, November 10—Dr Tinsley R Harrison, Nashville, Tenn, discussed 'Cardiac Dyspnea' before the Minnesota Pathological Society, November 16—Dr Carl V Weller, Ann Arbor, Mich, addressed the Hennepin County Medical Society, Minneapolis, November 10, on 'Intrinsic Factors in the Causation of Cancer'

Dr Meyerding Honored—Dr Edward A Meyerding, St Paul, executive secretary of the Minnesota Public Health Association and secretary of the Minnesota State Medical Association, was honored at a testimonial dinner, November 11 in recognition of his many years' service in the field of public health Dr Sidney A Slater, superintendent, Southwestern Minnesota Sanatorium, Worthington, acted as toastmaster, and speakers included Drs Jay Arthur Myers, Minneapolis president of the National Tuberculosis Association, Alfred W Adson, Rochester, president of the state medical association Olaf J Hagen, Moorhead, president of the Minnesota Public Health Association for the past year, James M Hayes, Minneapolis, president-elect of the state medical association, Everett K Geer, St Paul, Arthur T Laird, Nopeming, and Mrs A L Sperry, Owatonna who represented the volunteer Christmas Seal workers of the state Dr Meyerding has served as executive secretary of the public health association for fourteen years Prior to that he was director of the division of hygiene and special classes of the public schools of St Paul for fifteen years He spent two years in the U S Army Medical Corps during the World War and is now a colonel in the reserve He has been secretary of the state medical association since December 1924 but is now on leave of absence from active duty

NEBRASKA

Society News—Drs Howard B Hamilton and Benjamin Carl Russum, Omaha, addressed the Omaha-Douglas County Medical Society, November 9, on 'Appendicitis in Childhood' and 'Fatal Pulmonary Embolism' respectively Drs William R Hamsa and Frank Lowell Dunn addressed the society, October 12, on 'Evaluation of Scoliosis Treatment' and 'Treatment of Arthritis' respectively—Dr Robert D Schrock, Omaha, addressed the Platte-Loup Medical Society, October 13, on 'Plaster versus Splints in Fracture of the Long Bones'

NEW JERSEY

Society News—Dr Frank H Lahey, Boston addressed the Bergen County Medical Society, Hackensack, November 9, on 'Thyroid Diseases,' and Dr Edward M Z Hawkes, Newark, first vice president of the Medical Society of New Jersey, discussed activities of the state society

Tuberculosis Meeting—Dr Jay Arthur Myers Minneapolis, president of the National Tuberculosis Association was the guest speaker at the annual meeting of the New Jersey Tuberculosis League in New Brunswick, October 22 Among other speakers were Drs Henry H Kessler, Newark Harold S Hatch, Morristown Joseph R Morrow, Ridgewood, and Joseph H Kler, New Brunswick

NEW YORK

Pilgrim Hospital Head Appointed—Dr Harry J Worthing medical superintendent of the Willard State Hospital has been appointed medical superintendent of Pilgrim State Hospital, Brentwood, to succeed Dr William J Tiffany, who recently became state commissioner for mental hygiene Dr Worthing graduated from Syracuse University College of Medicine, Syracuse, in 1913

Society News—Dr Stanley P Jones Mattituck addressed the Suffolk County Medical Society in Riverhead October 28 on undulant fever—Dr Edgar A Vanderveer, Albany, was elected president of the New York State Society of Industrial Medicine at its annual meeting in Corning November 4—Dr William W Woodruff, Saranac Lake, addressed the Jefferson County Medical Society, Watertown, in October on 'Surgery of the Chest'—Drs Alvan L Barach and Norman H Plummer New York and Edward S Rogers, Albany presented a program on pneumonia before the Warren County Medical Society, Glens Falls, October 13—Thomas J Cook, DDS Philadelphia, addressed the Dutchess County Medical Society, Poughkeepsie, November 10 on 'Diseases of the Mouth of Interest to the Physician and Dentist in Relation to Systemic Disease'

Cancer Exhibit and Program—The Medical Society of the County of Nassau and the Nassau County Cancer Committee jointly presented a public exhibit and program on cancer October 19 which was attended by about 500 persons in spite of inclement weather Dr Louis C Kress Buffalo addressed

an audience of women in the afternoon on 'Cancer—A Challenge to Women' In the evening Dr Kress addressed a regular meeting of the medical society on 'The Responsibility of the Family Physician to the Cancer Patient,' and Dr Stanley P Reimann, Philadelphia, on 'The Effects of Hormones upon Malignancy' The exhibit included material on cutaneous granulomas, inflammatory carcinoma of the breast, cancer of the lip, pathogenesis of skin cancer, Wilms' tumor of the kidney, development of cancer in burn scars, cancer of the kidney and of the urinary tract, bone tumors, cancer of the lung, melanoma, cancer of the rectum and educational matter prepared by various cancer organizations

New York City

Personal—Dr George Gray Ward, emeritus professor of gynecology of the New York Post-Graduate Medical School and Hospital, Columbia University, was made an honorary fellow of the British College of Obstetricians and Gynecology October 27

Hospital Presents Clinical Seminar—The Beth-El Hospital, Brooklyn presented its fourth annual clinical seminar October 4-7 Mornings were devoted to rounds at the hospital, afternoons and evenings to sessions at the Silver Manor Among speakers at the evening meetings were Drs Andrew C Ivy, Chicago, on 'Physiology of the Gastro-Intestinal Tract', Frederick Tilney, New York, 'Encephalitis,' and John E Jennings, Brooklyn, 'Cancer of the Breast—Diagnosis, Radiation, Surgery'

Society News—The annual dinner of the Association for the Advancement of Industrial Medicine and Surgery was held October 20 with the following speakers Dr Albert E Russell, U S Public Health Service, 'Syphilis Control in Industry', Dr Byron P Stookey, 'Herniations of Nucleus Pulposus in Relation to Low Back Pain,' and Mr Bernard Botem, special prosecutor in accident fraud cases 'Present Medicolegal Trends'—The Philadelphia Orthopedic Club met with the section of orthopedic surgery of the New York Academy of Medicine November 19 Among the speakers were Drs Arthur Krida on 'An Encircling Fascial Band Operation for Hallux Valgus and Splay Foot', Albert B Ferguson, 'A Standard of Anteroposterior Alinement of the Lumbosacral Joint, with Deductions Concerning Development and Displacement,' and Charlton Wallace, 'Summary of Results of the 1935 Epidemic of Polymyositis'—Drs Robert H Melchionna and James R Lisa addressed the New York Pathological Society, November 18, on 'A Study of the Pharyngeal Pituitary Gland' and 'Pathological Changes of the Heart in Sudden Death' respectively

NORTH CAROLINA

Meeting of Urologists—Dr Homer G Hamer, Indianapolis, was the guest speaker at the twelfth annual meeting of the North Carolina Urological Association in Asheville, October 17-18 on 'Diagnosis and Treatment of Metastatic Infections of the Kidney' Dr Claude B Squires, Charlotte, was elected president

District Meetings—A symposium on infections as related to general practice was presented at a meeting of the Eighth District Medical Society in Winston Salem, October 19, by the following speakers Drs Oliver J Hart and William H Sprunt Jr, Winston-Salem, Kenneth B Geddis High Point William S Hester, Reidsville, and Moir S Martin, Mount Airy The guest speaker was Dr Sylvia Allen, Baltimore, on 'The Effect of Infections on Mental and Emotional Diseases'—The fall meeting of the Tenth District Medical Society was held at Hendersonville November 3 Drs Donnell B Cobb, Goldsboro and Wingate M Johnson, Winston-Salem, president of the Medical Society of the State of North Carolina were the guest speakers Dr Cobb spoke on 'Congenital Pyloric Stenosis'

OHIO

Society News—Drs Frank E Stevenson and Merlino L Cooper Cincinnati addressed the fall meeting of the eighth district of the Ohio State Medical Association, October 15, in Zanesville on 'Clinical Aspects of Infantile Paralysis' and 'Etiology and Bacteriology of Infantile Paralysis' respectively—At a meeting of the ninth district in Portsmouth, October 14, the speakers were Drs Fred W Rankin, Lexington, Ky, on 'Modern Management of Cancer in the Gastro Intestinal Tract', Clifford J Strahlev, Cincinnati, 'Cardiac Symptoms and Treatment' and George M Lyon Huntington W Va, 'The More Common Infections of Children and Their Management'

Graduate Program in Akron—The Summit County Medical Society presented its sixth annual graduate program at the Mayflower Hotel, Akron, November 10. The speakers were Drs B B Vincent Lyon, Philadelphia, who spoke on "Methods of Diagnosis and Treatment of Cholecystitis" and "Diagnosis and Management of Peptic Ulcer", Max Cutler, Chicago, "Breast Tumors" and "Recent Developments in Radiation Treatment of Cancer", Stewart H Clifford, Boston, "Intracranial Hemorrhage in the New-Born" and "Diagnosis and Treatment of Important Diseases of the New-Born". Mr A R Jaqua, Cincinnati, gave an address at the dinner on "Economic Pitfalls for the Doctor and His Estate".

Scholarship Offered by State University—The Elizabeth Clay Howald Scholarship of \$3,000 is offered by Ohio State University, Columbus, to "any person who has shown marked ability in some field of study and has in progress work the results of which promise to constitute important additions to our knowledge". The recipient will be expected to devote full time to his investigations, which may be carried on at any place where there are particular advantages for his field of study if he has at any time been connected with the university as student or staff member. If he has not had any connection with the university, he must carry on his work there. Applications must be filed with the dean of the graduate school not later than March 1, 1933. The appointment will be made April 1 and the term will begin July 1, to extend to July 1, 1939.

PENNSYLVANIA

Annual Postgraduate Day—The Allegheny Valley Hospital, Tarentum, offered its annual postgraduate day November 9 with a group of speakers from Johns Hopkins University School of Medicine, Baltimore as follows: Drs Benjamin M Baker Jr, on "Circulatory Failure" and "The Hypertensions", William F Rienhoff Jr, "Surgical Treatment of Pulmonary Diseases" and "Stomach Surgery," and John A C Colston "Kidney Conditions" and "Sulfanilamide in Treatment of Genito-Urinary Diseases".

Twenty-Fifth Anniversary of State Hospital—The twenty-fifth anniversary of the opening of the Allentown State Hospital was celebrated October 12 with a special program. An oil painting of Dr Henry I Klopp, who has been superintendent of the hospital since it was founded, was unveiled as the gift of the medical societies of Lehigh, Northampton and Bucks counties and the Lehigh Valley Homeopathic Society. Dr William C Sandy, Harrisburg, secretary of the American Psychiatric Association, paid tribute to Dr Klopp. Speakers on the program were Drs Sandy, on "Progress in the Hospital Care of the Mentally Ill During Twenty-Five Years", Earl D Bond, Philadelphia, "Evolution of Mental Hygiene in Twenty-Five Years," and James Allen Jackson, Danville, "Extra-Institutional Clinical Activities in Twenty-Five Years".

Philadelphia

Temple University Appointments—Dr William N Parkinson, dean of Temple University School of Medicine, has been appointed vice president of the university. Dr Oliver S English was recently promoted to be professor of psychiatry.

Personal—Charles Kurtzhals, Chester, formerly executive secretary of the Delaware County Tuberculosis Association, has been appointed executive director of the Philadelphia Health Council and Tuberculosis Committee, to succeed the late Mr Harvey Dee Brown.

Society News—The Philadelphia County Medical Society observed Pennsylvania State Health Day with a program November 10, with the following speakers: Drs William C Hunsicker, city director of public health, on "Philadelphia Water", Walter S Cornell, director of medical inspection, board of education, "Health Status of Philadelphia School Children", Robert L Gilman, "Control of Syphilis," and Hobart A Reimann, "Proposed Work of a Pneumonia Commission". Speakers at a meeting of the Philadelphia Pediatric Society, November 9, were Drs Francis F Schwenker, Baltimore, on "Chemotherapy of Acute Infections of the Nervous System", John A Kolmer, "Vaccination Against Experimental Meningococcus Meningitis," and Donald M Pillsbury, "Acetarsone in Therapy of Prenatal Syphilis". Dr Ralph S Muckenfuss, New York delivered the annual Gross Lecture of the Pathological Society of Philadelphia November 11 on "Epidemic Encephalitis". Speakers before the Philadelphia Psychiatric Society, November 12 were Drs Robert S Bookhammer and Earl I Saxe on "Preliminary Report on Metrazol Therapy of the Psychoses" and Harold D Palmer and Stephen H Sherman, "A Study of Involutional Melancholia".

Pittsburgh

Society News—At a meeting of the Allegheny County Medical Society November 16 the speakers were Drs Thomas T Sheppard on "Diagnosis and Treatment of Acute Respiratory Infections", George V Foster, "The Use of Fascia Lata in the Repair of Hernia", Stuart N Rowe, "Bilateral Parasagittal Brain Tumors," and Mr Elbert R Moses of the Pittsburgh School of Speech, "Fundamentals of Good Speech."

RHODE ISLAND

New England Surgical Meeting—The annual meeting of the New England Surgical Society was held in Providence October 1-2. Demonstrations were arranged at the Rhode Island and Memorial Hospitals and scientific programs were presented at the Rhode Island Hospital and the Rhode Island Medical Library Auditorium. Among those who presented papers were:

Dr Philemon E Truesdale Fall River, Mass Subperiosteal Resection of the Manubrium for Funnel Chest

Dr George R Dunlop Worcester, Mass Acute Hemorrhagic Pancreatitis

Dr Charles C Lund Boston Operative Treatment of Ulcerative Colitis

Dr John S Hodgson Boston Relief of Pain in Malignant Disease

Dr Horace K Sowles Boston, Reconstruction Operations for Hypertrophy of the Female Breast

Dr John M Birnie, Springfield, Mass, was elected president

and Dr John F Gile, Hanover, N H, secretary

TEXAS

Society News—Dr Bernard H Bayer, Houston, addressed the Harris County Medical Society, Houston, October 13 on "Perforated Peptic Ulcer". Dr Foster Kennedy, New York was the guest speaker at the semiannual meeting of the Texas Surgical Society in San Antonio October 11-12, his address was on "The Organic Background of Mind". Dr Herman W Johnson, Houston, addressed the Jefferson County Medical Society, Beaumont, October 11, on "Management of Obstetrical Emergencies". The annual meeting of the Panhandle Medical Society was held in Pampa October 12-13, with the following guest speakers, among others: Drs Arthur E Hertzler, Halstead, Kan, on "Operating Room Diagnosis of Uterine Bleeding", Morris Edward Davis, Chicago, "Treatment of Hemorrhage Late in Pregnancy", Otto Jason Dixon, Kansas City, Mo, "Modern Treatment of Mastoid Disease" and James R Jaeger, Denver, "Surgery of the Cranial Nerves".

VERMONT

Typhoid at Brandon—Eight cases of typhoid with one death occurred in a single family in Brandon recently, according to a newspaper report. The first patient was an 8 year old girl who became ill after swimming in a river. Subsequently seven other members of her family developed typhoid. A brother died October 14.

VIRGINIA

Personal—Dr Warren A Colton, clinical director of the Veterans' Administration Facility, Kecoughtan, has been named chief medical officer to succeed Dr Edward N Schilling, who was recently transferred to Atlanta. Dr Harvey C Hardegree, recently on the staff at Excelsior Springs, Mo has succeeded Dr Colton as clinical director.

Specialty Society Elections—Several specialty societies held their annual meetings and elected officers during the recent meeting of the Medical Society of Virginia in Roanoke. Dr Frederick M Hodges, Richmond, was made president of the Virginia Roentgen Ray Society, and Dr Vincent W Archer, Charlottesville, secretary. Dr Foy Vann, Norfolk was elected president and Dr Bernard H Kyle, Lynchburg secretary of the Virginia Orthopedic Society. Dr W Ambrose McGee, Richmond, was made president and Dr John V Bishop, Roanoke, secretary of the Virginia Pediatric Society. The Virginia Society of Obstetricians and Gynecologists elected Dr Flavius O Plunkett, Lynchburg, president, and Dr Eugene S Groseclose, Lynchburg, secretary. Dr William W S Butler, Roanoke, was elected president of the Virginia Urological Society and Dr Lawrence T Price, Richmond secretary.

WEST VIRGINIA

Schwinn Lecture—Dr Arthur L Jones Wheeling delivered the second Jacob Schwinn Lecture of the Ohio County Medical Society in Wheeling November 19 on "Obstructive Uropathy". The lecture was established in honor of Dr Uropathy. The lecture was established in honor of Dr Schwinn, who has practiced more than fifty years in Wheeling and has served as president of the county society and of the West Virginia State Medical Association. He is 82 years old.

WISCONSIN

Physicians Honored—Citizens of Little Chute gave a testimonial dinner October 13 to honor Dr. Joseph H. Doyle on his fortieth year of medical practice. Dr. Doyle graduated from the Wisconsin College of Physicians and Surgeons, Milwaukee, in 1897. He has been president of the village school board for twenty-one years and a director of the bank since its organization in 1907. In 1910 he was president of the Outagamie County Medical Society. The Sauk County Medical Society honored Dr. Marcus Bossard, Spring Green, with a special program October 28 marking his fiftieth year of practice. Dr. Bossard graduated from Bellevue Hospital Medical College, New York, in 1886 and after a year of graduate work began practice in Spring Green in 1887. He has also practiced in Milwaukee and Prairie du Sac. Guest speakers at the dinner were Drs. Harold E. Marsh, Reginald H. Jackson and Addie M. Schwittay, all of Madison.

Committee to Study Hospital Insurance—At the recent annual meeting of the Medical Society of Wisconsin a special committee was appointed to make a thorough study of hospital insurance, reviewing the entire field of hospital management in Wisconsin with a view to the possible need for an insurance program. Special actuarial and legal counsel will be employed to study the element of risk and thus develop a sound factual basis for the work of the committee. Members of the committee are Drs. Stanley J. Seeger, Milwaukee, chairman, Stephen E. Gavin, Fond du Lac, Raymond G. Arveson, Fred-eric, Edward L. Tharinger, Milwaukee, Albion H. Heidner, West Bend, Mr. J. George Crownhart, Madison, secretary of the state medical society, Sister Mary Bernadette, superintendent of St. Mary's Hospital, Madison, Rev. H. L. Fritschel, Milwaukee, administrator of Milwaukee Hospital, Mrs. C. D. Partridge, Cudahy, executive secretary of the Wisconsin State Nurses' Association, and Mr. C. I. Wollan, La Crosse, manager of La Crosse Lutheran Hospital.

GENERAL

Special Board Examination—The American Board of Dermatology and Syphilology announces that a written examination for Group B applicants will be held in various cities April 16. Oral examinations for applicants in groups A and B will be given in San Francisco, June 13-14, 1938. Applications should reach the secretary, Dr. Clarence Guy Lane, Boston, before Feb. 15, 1938.

National Anti-Syphilis Committee—Gen. John J. Pershing has accepted the chairmanship of a National Anti-Syphilis Committee organized by the American Social Hygiene Association to further the campaign against venereal diseases. Dr. Ray Lyman Wilbur, president of Stanford University, California, is vice chairman and Mr. Charles H. Babcock is chairman of the executive committee. A drive for funds to finance the campaign will be made beginning Feb. 2, 1938, which has been designated the second National Social Hygiene Day.

Academy of Tropical Medicine—The fourth annual dinner of the Academy of Tropical Medicine will be held in New Orleans December 2, at La Louisiane Restaurant during the meeting of the Southern Medical Association. Dr. George C. Shattuck, Boston, will be toastmaster and Dr. Wilbur A. Sawyer, director of the International Health Division of the Rockefeller Foundation, New York, will give his presidential address on 'The Importance of Environment in the Study of Tropical Diseases.' The first award of the Theobald Smith Medal will be made by Col. Charles F. Craig, New Orleans, past president of the academy, to Marshall A. Barber, Ph.D., of the staff of the International Health Division of the Rockefeller Foundation, New York.

Jacobi Fellowship for Women Physicians—The Women's Medical Association of New York offers the Mary Putnam Jacobi Fellowship of \$1,000 for one year's graduate work in the medical sciences. The fellowship is open to any woman graduate of an approved medical school, who must be endorsed by the head of the department in which her previous work has been done. The recipient must give full time to the problem selected and should preferably make the study abroad, if she is not a resident of the United States; she should preferably study in the United States. Applications for the 1938-1939 fellowship should be filed before April 1, 1938, accompanied by statements as to health, educational qualifications and the proposed problem for investigation to the chairman of the fellowship committee, Dr. Annie S. Daniel, 321 East Fifteenth Street, New York.

Society News—Dr. Samuel B. Scholz, Jr., Philadelphia, was elected president of the Association of Life Insurance Medical Directors at the annual meeting in New York, October 28. Dr. Harold H. Mitchell, Long Island City, N. Y., was chosen president-elect of the American Association of School Physicians at the annual meeting in New York in October. Dr. John Sundwall, Ann Arbor, Mich., is president. Drs. Fredrika Moore, Cambridge, Mass., and James F. Rogers, Washington, D. C., were elected vice presidents and Dr. Arville O. DeWeese, Kent, Ohio, reelected secretary. Dr. Willard C. Rappleye, dean of the College of Physicians and Surgeons, Columbia University, New York, was chosen president-elect of the Association of American Medical Colleges at its meeting in San Francisco in October. Dr. William S. Middleton, Madison, Wis., was elected vice president and Dr. Fred C. Zapffe, Chicago, remains as secretary. Dr. Alan M. Chesney, Baltimore, was installed as president.

Medical Bills in Congress—*Changes in Status*. S. Res. 194 and H. Res. 352, submitted by Senator Copeland, New York, and by Representative Chapman, Kentucky, have been agreed to respectively, by the Senate and the House, requesting the United States Department of Agriculture to transmit to the Senate and House information with respect to the deaths incident to the use of Elixir of Sulfanilamide. *Bill Introduced*. S. 3008, introduced by Senator Davis, Pennsylvania, proposes to amend the existing laws against unlawful restraints and monopolies so as to provide that nothing in such laws shall prevent persons engaged in commerce from granting differentials in the prices of commodities sold to, or sold for resale to, and actually resold to, any corporation organized and operated exclusively for religious, charitable, scientific, literary or educational purposes, or for the prevention of cruelty to children or animals, no part of the net earnings of which inures to the benefit of any private shareholder or individual, and no substantial part of the activities of which is carrying on propaganda, or otherwise attempting to influence legislation.

Society of Tropical Medicine—The thirty-third annual meeting of the American Society of Tropical Medicine will be held in New Orleans November 30-December 3 in conjunction with the Southern Medical Association. Dr. George W. McCoy of the U. S. Public Health Service will deliver the second Charles Franklin Craig Lecture on 'The History of Leprosy in the United States.' Other speakers at the sessions some of which will be held jointly with the National Malaria Committee, will include:

Dr. Lee Foshay, Cincinnati: Serum Treatment of Tularemia
Dr. William M. James, Panama: R. P. Emetine Therapy
Dr. George C. Shattuck, Boston: Clinical Syphilis in the American Indian

Drs. M. Ruiz Castaneda and J. Vargas Carriel, Mexico: D. F. Skin Test for the Detection of Typhus Susceptibles

Drs. Noel Paul Hudson, Columbus, Ohio, and Edwin H. Lennette, Chicago: Incidence of Polioclonal Serums in Regions Where Polio myelitis Epidemics Are Infrequent

Dr. Richard P. Strong, Boston: Bartonella Infection

Dr. Herbert C. Clark, Panama, R. P., will deliver his presidential address at a luncheon December 1 at the Broussard Restaurant on 'Development of International Transportation and Its Effect on the Practice of Medicine.'

Prize to Inventor of Cyclotron—Ernest O. Lawrence, Ph.D., professor of physics, University of California, Berkeley, received the Comstock Prize of the National Academy of Sciences at the annual meeting in Rochester, N. Y., in October for his development of the cyclotron. The Comstock Prize, which carries an honorarium of \$2,500, is awarded every five years to the bona fide resident of North America who shall have made in the judgment of the academy, the most important discovery or investigation in electricity or magnetism or radiant energy. With the cyclotron, an apparatus in which rays of enormous energy are produced, Dr. Lawrence has been able to break up atoms and transmute them into other atoms, some of which are radioactive. At the academy meeting Dr. Lawrence reported that a new cyclotron is being built in which even more powerful rays will be formed; it will weigh 220 tons. The new machine will be used both for research on transmutation of elements and for medical and clinical research on the possible curative values of the various types of radiation. It is reported Dr. Lawrence, who is 36 years old, is a native of South Dakota. He graduated from the University of South Dakota in 1922 and took his doctorate at Yale University in 1925. He was appointed associate professor of physics at California in 1928 and became professor in 1930.

Annual Report of the Red Cross—Measures to reduce the heavy toll of accidents and relief rendered during the flood in the Ohio and Mississippi Valley last January were the high points in the experience of the American National Red Cross

during the fiscal year ended June 30, according to the annual report just issued. First aid training was widened, 256,884 certificates having been issued, an increase of 34,191 over the previous year, 81,291 were issued in life saving. Emergency first aid stations were established at 2,513 points and plans had been made for 3,283 more. In view of the fact that home and farm accident fatalities outnumber all other types of accidental deaths, the Red Cross began in 1935 a home and farm accident prevention program. The report states that 1,776 chapters requested material for such programs and that check lists showing hazards of homes and farms were distributed to seven million homes. Medical and health services were especially important during the January flood and the New London, Texas, school disaster, as well as in the period following the spring tornadoes in the South in 1936. Special hospitals were set up for flood victims stricken with influenza and pneumonia during the flood and in Arkansas an emergency hospital was established to cope with an epidemic of cerebrospinal meningitis. The report lists 1,035,764 visits by 666 public health nurses, of which 234,515 were maternity visits and 425,543 visits to the sick. The Red Cross classes in home hygiene and care of the sick gave certificates to 54,830 students. The financial statement shows that the Red Cross had assets amounting to \$19,782,279.28 as of June 30. During the fiscal year it had expended \$25,984,999.28, which included contributions for relief during the Ohio and Mississippi flood amounting to \$25,312,167.70, said to be the largest fund ever received for disaster relief during peace time.

FOREIGN

Anatomical Society Meeting—The forty-fifth annual meeting of the German Anatomical Society was held in Königsberg, East Prussia, August 25-28. Dr. Ross G. Harrison, Sterling professor of biology, Yale University School of Medicine, New Haven, Conn., was president and acted as chairman of all sessions. Drs. Charles C. Macklin, London, Ont. and Allan L. Grafflin, Boston, were among the participants in the meeting.

Consulting Centers for Rheumatism—At the International Congress on Rheumatism and Hydrology, to be held in Oxford, England, March 26-31, there will be an exhibition of plans for consulting bureaus for rheumatic patients, according to present plans. If there is sufficient interest and if funds can be obtained, prizes may be offered. For details apply to Dr. J. F. L. van Breemen, Keizersgracht 489, Amsterdam, Holland.

Government Services

Changes in U S Public Health Service

Dr. John T. McNabb, assistant surgeon, reserve corps for active duty, U S Hospital for Defective Delinquents, Springfield, Mo.
Dr. Wixom S. Sibley, assistant surgeon, regular corps, U S Marine Hospital, Mobile, Ala.
Dr. Carl V. Morrison, assistant surgeon, reserve corps, U S Public Health Service, Springfield, Mo.
Dr. Andrew B. Steele, assistant surgeon, reserve corps, Lewisburg, Pa.
Dr. Frank A. King, surgeon, reserve corps, U S Marine Hospital, New York.
Dr. Thornton L. Waylan, assistant surgeon, reserve corps, U S Marine Hospital, Cleveland.
Dr. James F. Spindler, assistant surgeon in the reserve corps for active duty at the U S Public Health Service Dispensary, Washington, D. C.
Dr. Lucius A. Salisbury, assistant surgeon, reserve corps for active duty, U S Marine Hospital, New York.

Colonel Tuttle Named Medical Director of United Air Lines

Col. Arnold D. Tuttle, medical corps, U S Army, for four years commandant of the School of Aviation Medicine, Randolph Field, Texas, has been appointed medical director and chief flight surgeon of United Air Lines. Colonel Tuttle will retire from the army. In his new position he will personally supervise the physical fitness of the company's flying personnel and will carry on research projects dealing with the promotion and maintenance of safe flying as far as the human element is concerned. According to a report from the United Air Lines, the company will provide space at its operation headquarters at the Chicago Airport for Colonel Tuttle's research department. Colonel Tuttle, who is 57 years old, graduated from the University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore, in 1906.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Oct. 30, 1937

The Physician of the Future

In an address to a meeting at Leeds, held as part of the national health campaign, Lord Horder said that inevitably the physician's work in the future will be more and more educational and less and less curative. More and more he will deal with physiology and psychology and less and less with pathology. He will spend his time keeping the fit fit rather than in trying to make the unfit fit. And we must make it worth his while to do this work. This reorientation of his education and his work is overdue, and it will remain overdue until reorientation takes place in the attitude of the health authorities toward him and toward his sphere of usefulness. And we must not think that his education is finished for all time when he becomes qualified. It is a duty we owe to every doctor to get him back now and again to the stimulating and informing atmosphere of the wards and the laboratories and, no less helpful, to the atmosphere created by his colleagues and teachers.

This means of course spending more money, but Lord Horder could not conceive how money could be better spent, and as a long term investment he believed it would pay over and over again. It was at the periphery and not only at the center where energy and knowledge were required. The physician was the expert who made contact with the individual and acted as the conducting medium between the individual and the facilities afforded by the health services through the local authorities. And not only the health services, there was the important matter of physical training and recreation. Grants were good and sergeant majors were useful, but the physician's training was essential to the proper use of physical methods in the production of national fitness. And so also in the equally important matter of the proper selection and the proper preparation of food. If economics had let us down—and it seemed as though it had—medicine must do what it can to hold the fort until economics came once more to its help.

Increase of Functional Nervous Diseases

While modern sanitation has greatly diminished or extinguished epidemic diseases such as plague, cholera, smallpox, and typhoid, the stress of civilization has greatly increased functional nervous diseases. It is only in recent years that a hospital, the Tavistock Clinic, devoted entirely to the treatment of these diseases, has been established. So great has been the demand on its services that a request for \$1,500,000 is being made so that it can erect larger premises. The duke of Kent, who is president, took the chair at the British Medical Association House, where an appeal was made for funds. Sir Farquhar Buzzard, professor of medicine in the University of Oxford, said that at least one third of all the sickness in this country was due to causes which were not organic in origin. About 50 per cent of the 15,000,000 insured population of England and Wales "went on the panel" every year and over 31,000,000 weeks of working time was lost annually by industrial sickness alone. A conservative estimate was that the neuroses and psychoneuroses were annually responsible for the loss of 10,000,000 weeks of working time. If he should be placed at the head of a great business organization, the first thing he would do would be to take on a whole time medical psychologist to study his employees and their conditions in health and deal with all cases of nervous disorder as they arose. The sick roll would rapidly diminish, the certificates of debility, gastritis and anemia would gradually become almost unknown, and the efficiency and happiness of the staff would be enhanced.

Lord Hollenden (industrialist) said that their most urgent problem had been to meet the demands for treatment of those who could not afford the full private fees or any fees at all. The ultimate solution of the nation-wide problem of psychoneurotic illness must lie largely in supplementing medical education, for at present there were not enough physicians who had acquired the special knowledge and skill in treatment which were needed for these conditions. The teachers in this branch of medicine were mostly in London for the moment, and consequently most of the training of graduate students must be carried out there. As provincial centers got the staff and establishment which they needed, the problems of providing treatment and doing preventive work would come nearer solution.

The Protection of Food Against Poison Gas

The government is taking the most minute precautions against attacks on this country by poison gas. The latest is the issue of a pamphlet for producers, manufacturers and distributors of foods regarding protection against contamination by poison gas in time of war, which has been issued by the Air Raids Precautions Department of the Home Office. It is pointed out that foodstuffs, for the most part, absorb gas readily and, if badly contaminated, would have to be destroyed. The protection afforded by different types of packing materials is stated. These range from containers, such as hermetically sealed glass bottles or cans, which when undamaged give complete protection, to ordinary sacks, such as are used for flour or grain, which give almost no protection. It is recommended that if it is necessary in an emergency to stack foodstuffs in open dumps or depots they should be covered by large tarpaulins. Open stores of grain or fodder should be similarly protected.

There are also hints for shopkeepers. When an air raid warning has been received, the shop should be completely closed up to keep out poison gas. Close fitting doors, windows or shutters will be required. Stocks should be stored in such a way as to prevent any gas that may enter the shop from penetrating to the food. All supplies should be kept as long as possible in their original packing and further protection given by keeping them in cupboards, drawers and boxes instead of on open shelves. These precautions would be necessary throughout a war, as the period of warning before an air raid is likely to be short. The protection of food in private houses will be dealt with in a handbook for householders, now being prepared.

"A Blot on London Medicine"

The medical schools of England for long worked in isolation. One of the great achievements of Lord Moynihan was to break down this isolation in the case of the surgeons by founding first a surgical club and then the Association of Surgeons of Great Britain. A similar service for medicine was done by Osler and others in founding the Association of British Physicians. But much more remains to be done. In his Harveian oration, delivered to the Royal College of Physicians, Sir Arthur Hurst recalled that he was the 281st orator who officiated on St. Luke's day in commemoration of the famous physician of King Charles I. He reviewed the recent advances in the physiology of the stomach and their bearing on our new knowledge of the causation and treatment of microcytic and macrocytic anemia and subacute combined degeneration of the cord in which he himself has had an important part. In the past the international relations of the college had been limited. It was still a blot on London medicine that there was so little intercommunication between the staffs and students of the twelve teaching hospitals, in striking contrast to the University of Paris, where students were free to attend clinics and lectures in any hospital they pleased. Visitors from the dominions and America generally knew more about the methods of teaching and the day to day work of the London hospitals than the hos-

pital physicians themselves, who were satisfied to continue their activities in far from splendid isolation. He suggested that the college might renew old associations with the schools of Padua and Leyden, where so many of their seventeenth and eighteenth century fellows received the greater part of their medical education, and enter into relations with the American College of Physicians, whose fellowship was open to Canadians.

Development of the Oxford Medical School

Graduates of the ancient universities of Oxford and Cambridge generally complete their medical training at the London hospitals, as the hospitals in Oxford and Cambridge are small and therefore limited in material for clinical teaching. But the munificent gift of \$1,000,000 from Lord Nuffield (the automobile magnate) has rendered great advances possible at Oxford. Professors of surgery and of obstetrics and gynecology are to be appointed, and new wards for their use are to be added to the Radcliffe Infirmary, with operating and x-ray amphitheatres. A new wing is to be added to the maternity of the hospital. Lord Nuffield has also offered the university \$5,000,000 with a site of the approximate value of \$500,000 for a college for graduate studies. Lord Nuffield's gifts are without precedent in the history of the university. Facilities for clinical research are to be organized which will be at least equal to those provided in the various scientific departments of the university.

The British Medical Association and Precautions Against Air Raids

The British Medical Association is taking steps to make a survey of the medical profession with a view to ascertaining how many physicians in each area would be likely to be available in such emergencies as air raids and in what capacity, having regard to their engagements and experiences. To this end physicians will be circularized and asked to state whether they would be prepared to offer their services on the understanding that they will have an opportunity every year of restating their wishes.

PARIS

(From Our Regular Correspondent)

Oct 30, 1937

Opening of Hospital of the Foch Foundation

Reference was made previously to a large hospital under construction in a Parisian suburb as a memorial to the late Marshal Foch. The hospital was opened for the reception of patients October 19, in the presence of Marshal Foch's widow, the president of the French Republic and his cabinet. The corner stone of this latest addition to hospital resources here was laid in 1931, but progress in its construction was delayed by lack of funds. The majority of the funds (80 per cent) has been donated by Americans as a token of the ties which bind France and the United States. One of the most active workers here in raising the funds was Mrs. Jacques Balsan (nee Vanderbilt). The new hospital is eleven stories high, includes a central and two lateral wings, and has a capacity of 340 beds and a wing for 100 nurses. The operating and sterilizing rooms occupy the top floor, and the lower floors contain wards and private rooms. All rooms of the hospital are provided with facilities for air conditioning.

The aim of the organizers of the hospital is to take care of the middle class public (students, teachers, artists, government employees and large private corporation clerks) who cannot afford to enter a private hospital or go to one of the many public institutions in Paris. The official title of the new hospital will be Mount Valerian Medical Foundation because a Foch Foundation already exists in Paris. The new hospital is located just across the Seine from the Bois de Boulogne, the great public park here, in the suburb of Suresnes on the flanks of Mount Valerian.

Pulmonary Reactions to Vaporized Solutions

At the July 27 meeting of the Academie de medecine a report was read by Bianchi and Delaville of some experimental work on the effects on the lungs of the inhalation of various vaporized solutions. In a previous report read at the January 26 meeting the authors stated that chemical particles in suspension in a gaseous atmosphere when inhaled passed beyond the lung and could be demonstrated in the urine. In the second series of experiments, rabbits and guinea pigs were provided with a gas mask or placed under a 5 liter bell jar. The following solutions in the form of a vapor were then introduced and allowed to escape at the top of the bell jar: suspensions of colloidal iron, oily emulsions, isotonic and hypertonic saline solutions and distilled water. The animals were killed at intervals varying from immediately after the experiment to six days. On microscopic study of the lungs, two types of effects were noted. 1. Following the inhalation of the vaporized colloidal iron suspensions and oily emulsions, a slight edema of the alveolar epithelium and inclusion of the iron particles or droplets of oil was noted. 2. With the isotonic and hypertonic saline solutions, a widespread hyperemia is noticeable. In both cases a variety of tissue reactions, slight to intense, takes place in the pulmonary alveoli. The reactions take place within a few minutes after the vaporization experiment is begun.

These observations, according to the authors, may clear up some still obscure points regarding certain respiratory attacks like those seen in asthma and in fogs. They also are instructive in calling attention to the potential dangers of drugs in vapor form which may have a strong irritant action on the pulmonary alveoli. Caution must be exercised in giving these treatments, just as in the case of short wave currents.

Spirochetal Jaundice as an Occupational Disease

At the July 27 meeting of the Academie de medecine a paper was read by Janbon and his associates on an epidemic of spirochaetosis ictero haemorrhagica in twenty-three miners. The pulpified kidney, liver and spleen of 125 rats (*Mus decumanus*) captured in the mine were inoculated into guinea pigs according to the Martin and Pettit technic, all with negative results. The sero-agglutination test, however, revealed a latent "spirochetose inapparente" form of the disease in 20 per cent of the inoculated guinea pigs. Search for spirochetes in the mud and on the walls of the galleries of the mine were negative. None of the miners had been bitten by the rats, but investigation revealed the fact that their food had often been contaminated by the rats and also that many of the miners had drunk the water in the lower galleries of the mine.

Prof Emile Sergent Retires from Public Hospital Work

One of the leading internists of Paris, Prof Emile Sergent, has reached the age limit and will be obliged to give up teaching in the large public hospitals here. His wards in the recently torn down Charite Hospital were the center of attraction for many of the younger men, who have since attained high rank in the profession. Professor Sergent is especially well known as a phthisiologist and has frequently been the guest of medical societies in all parts of the world.

Homage to Professor d'Arsonval

An admirer and friend of Professor d'Arsonval, professor at the College de France and internationally known as a leader in the field of electrical research, has just written his biography, under the title "Sixty Years of Science." d'Arsonval is now 86 years of age and came to Paris from central France in 1873. He entered the laboratory of Claude Bernard while still a medical student, and after the great physiologist's death he was appointed assistant to his successor, Brown-Sequard. In 1881

a special laboratory of biophysics was created for d'Arsonval and later he succeeded Brown-Sequard in the chair of medicine in the College de France. During the World War he was active in the munitions service and in 1925 was made a grand officer and later was given the grand cross of the Legion of Honor.

His research work on high frequency currents has made d'Arsonval known all over the scientific world. His name will always be associated with the perfection of high frequency apparatus as employed in medicine.

BERLIN

(From Our Regular Correspondent)

Oct 11, 1937

Distribution of German Physicians in 1937

A statistical report on the number and distribution of German physicians in the year 1937 has just appeared in the *Deutsches Aerzteblatt*, organ of the German Physicians' Association. The total number of physicians has increased in comparison with 1935 from 52,342 to 55,259. This increase is in part ascribable to the fact that information with respect to members of the medical profession is more readily obtainable under the new regulations.

As in former years, the geographic distribution of physicians within the German reich was found to be disproportionate, the number of physicians to each 10,000 of population varies from a minimum of 48 to a maximum of 158 (the latter figure represents Berlin). The 3,000 newly listed physicians were distributed rather evenly throughout the reich exclusive of Berlin. In the years 1933 and 1934, after the emigration of numerous Jews, the number of Berlin physicians underwent no small decrease, but it rose again subsequently and would have attained the 1932 level had not the law which forbids settlement of new doctors in Berlin supervened (there were 6,785 physicians in Berlin in 1932, 6,713 in 1937).

All members of the medical profession belong in one of the following five principal classifications:

Directors of institutions	4,608
Physicians on the staff of institutions but below the rank of director (assistants)	9,153
Physicians in government employ health officers confidential insurance consultants physicians engaged only in research and so on	5,000
Physicians professionally inactive	3,500
Independent practitioners	37,522

The sum of the foregoing figures will be found to exceed the actual total number of physicians because of certain duplications of classification, for example, the director of an institution or a doctor employed by the government may at the same time maintain a private practice. Of the "directors," approximately one third are, in addition, officials of health departments and so on, senior physicians of hospitals and university professors.

The number of doctors who can be classed only as directors of hospitals and other institutions for the sick amounts to 3,292, about 28 per cent of these are surgeons, 18 per cent internists and 7 per cent gynecologists and neurologists. Of physicians in governmental employ, more than 21 per cent still maintain private practice. The number of professionally inactive physicians increased from about 2,000 in the year 1935 to about 3,500, chiefly as a result of improved means of identification through compulsory registration. The figures show no increase in the number of independent practitioners. The number of insurance physicians has undergone a slight decline, owing no doubt, to the stricter prerequisites of admission to panel practice.

The number of specializing physicians amounts to 15,680, namely, 28.4 per cent of all physicians against a corresponding figure of 30.7 per cent in the year 1935. Double designations such as 'specialist in surgery and gynecology' or 'specialist in dermatology and urology' are no longer permitted; mention of a second specialty must not be made. A specialist may of

course continue to maintain a general practice. Of those specializing physicians who formerly used the designation "specialist in surgery and orthopedics," approximately one half chose to retain the style "specialist in surgery," the other half that of "specialist in orthopedics." This new ruling on nomenclature has exercised a certain influence on the computations with regard to the specialties in 1937.

Percentage of the Total Number of Specializing Physicians

	1937	1935
Internists	16.1	16.5
Surgeons	15.3	10.0
Gynecologists	10.6	9.8
Dermatologists	11.1	11.3
Otorhinolaryngologists	10.0	9.6
Ophthalmologists	8.6	8.5
Pediatricians	7.4	7.3
Neurologists and psychiatrists	10.1	10.2
Phthisiologists and other specialists in diseases of the lung	3.3	3.1
Gastrologists	1.2	1.2
Urologists	0.0	1.1
Orthopedists	2.3	1.6
Specialists in oromaxillary diseases	0.9	1.0
Roentgenologists and radiologists	2.2	2.0

The number of women physicians has increased from 3,379 in 1932 and 3,644 in 1935 to 4,339 in 1937. Whereas the total number of physicians showed in 1937 a 5.6 per cent increase over 1935, the number of women physicians increased by 19.1 per cent.

Women Physicians in 1937 (in Percentages of All Women Physicians)

Class of Physicians	1937	1935	1932
Independent practitioners			
(a) In general practice	35.7	48.8	52.5
(b) In the specialties	15.5	19.4	21.4
Employed	21.6	24.2	21.8
Professionally inactive	17.0	7.6	4.3

According to the foregoing figures in the table of women physicians, the number of women in private practice, and particularly the number of those in general practice, has undergone a further decline. Nearly one third of the women physicians are employed, 225 of these occupying positions in various public health services. Of specializing women physicians nearly one half are pediatricians, second in numerical rank are the gynecologists, and next follow the ophthalmologists and the internists.

A special chapter of the report deals with Jewish physicians. In the new register of physicians all those who under the "Nuremberg Laws" are considered Jews are specially listed as such. On the other hand the so called hybrids, namely, half-Jews and quarter-Jews, receive no special racial designation in the register. There are 4,220 Jewish physicians registered, they constitute 7.7 per cent of all physicians within the Reich. If only practitioners are counted, then of 37,525 doctors, 3,748 (that is about 10 per cent) are Jews. Of the Jewish group, 408 are engaged in neither private nor insurance practice. In the larger cities there are 3,179 Jewish doctors practicing medicine and of this number 1,710, or 53.8 per cent, are specialists. Among Jewish physicians the specialties of predilection according to the statistics are dermatology and venereology, internal medicine, gynecology and pediatrics. Besides the Jewish doctors, 350 'hybrids' are physicians and in addition there are 210 doctors officially listed as 'of Jewish affinity' namely non-Jewish men whose wives are Jewish. Members of the first named group are excluded from the insurance practice along with the non-Aryan doctors. One pair of Jewish grandparents in the ascendancy of a physician is sufficient basis for exclusion from insurance practice.

Alcoholism Among School Children

Dr. Johannsen, public health official of Hechingen (Württemberg), elicited some surprising data from his investigation of the indulgence in alcoholic beverages by school children of the community. He found that drinking among the young was quite common throughout the district, 75 per cent of the school children were accustomed to consume alcoholic beverages and 19 per cent did so daily. Of the 5,207 school children, it was possible to question all but sixty. In 923 instances, children affirmed that even younger brothers and sisters already partook of alcoholic drinks.

New wine, the beverage most commonly consumed, is known to possess a fairly high alcoholic content. The second most frequently consumed beverage was beer. Wine, properly speaking, was the beverage named in 108 instances, spirits in forty-eight instances. Twenty children stated that they had been intoxicated on several occasions. Some remedial measures for this state of affairs were to be instituted.

Collaboration of the German Red Cross in the Fight Against Disease

The German Red Cross, according to its constitution, is committed to the fight against epidemic and other disease. The central depot of the Red Cross in Berlin-Neubabelsberg serves as the base of supplies. Here are kept, for emergency use in time of epidemics or disasters of any sort, a huge number of portable hospital and living barracks of the Doecker type. These portables are collapsible and can be shipped in packing cases. They are 15 meters long by 5 meters wide and are double walled. Special foundations are unnecessary, as the floors are adjustable. A portable together with all its necessary furnishings (bedsteads, mattresses, bed linen, towels, night-stands, buckets, water pitchers, wash basins and so on) can comfortably be transported in an ordinary railway coach and unloaded in a few hours at a siding. Recently a new service of motor trucks (owned by the railroads) has been introduced for shorter hauls. This transport service is available on Sundays as well as on week days. The setting up of the portables is entrusted to a specially trained mounter and together with the aid of local agencies the entire process of installation requires but a few hours. So called sickness contracts are entered into in advance between the Red Cross and the party to whom the portables are lent, in this agreement are defined the responsibilities of both contracting parties relative to the quite formidable costs of installation and maintenance.

SWITZERLAND

(From Our Regular Correspondent)

Oct 16, 1937

International Medical Week

The third International Medical Week in Switzerland, like the first and second weeks promoted by the *Schweizerische medizinische Hochschrift*, was held at Interlaken in September. Attendance was even greater than at the previous congresses, about 400 delegates were present. This congress too was officially sponsored by the federal government of Switzerland. Federal Councillor Dr. Etter, minister of public instruction, delivered the inaugural address. The management of the congress as in other years was in the hands of Prof. Alfred Gigon of Basel.

The first scientific lecture was delivered by Nobel prize winner Prof. Hans Spemann of Germany, his topic, "New Insight Into the Processes of Animal Embryology." A systematic causal analysis of the embryonal development of the Amphibia yields several data of fundamental significance which in their further implications may be related to important medical problems. The individual components of germinal cells in the Amphibia are not at first definitely conditioned to their later destiny, environmental influences select from out the rich

storehouse of organ-producing effects those which correspond to the locale. The germ cell is permeated with "fields of determination," which are retained, perhaps permanently. Normally they do not become perceptible because the exposed tissue is no longer capable of reaction to their influence. On the other hand, they are immediately demonstrable if one brings under this influence the embryonal tissue with its rich generative powers. These observations are of fundamental interest for medicine and perhaps also for research on tumors. The second speaker was Prof. Arthur Stoll of Basel on "Recent Developments in the Chemistry of Digitalis Glucosides." Stoll has been an important contributor to our knowledge of the chemistry of substances containing digitalis, especially through his isolation of glucosides from both squill and *Digitalis lanata*. Recently Stoll has succeeded in isolating in crystalline form a genuine glucoside, the seed of *Strophanthus Kombe* (K-strophanthoside). This new glucoside decomposes under hydrolysis with acids into strophanthidine and strophanthotriose, which consists of cymarose and two molecules of dextrose. A third paper, on tularemia, was submitted by Prof. K. F. Meyer of San Francisco. The speaker provided an impressive description of his investigations of this disease among the wild rodents of California; his talk was illustrated by extremely interesting motion pictures. The Faculty of Medicine of Zurich University took this occasion to confer on Professor Meyer in recognition of his scientific achievement the honorary degree of Doctor of Medicine.

"Brain and Nerves" was the second day's topic. Veraguth of Zurich first provided a historical account entitled "Fifty Years of Surgery of the Spinal Cord." His point of departure was the pioneer operation for a tumor on the spinal cord performed by the English surgeon Horsley in 1887. The speaker referred in particular to the advances which have been achieved since that time in surgical procedure and in early diagnosis. Hugh Cairns of London then spoke on "Results Reported in the Treatment of Intracranial Tumors." He discussed the results of surgical treatment and enumerated the factors that have contributed to a lowered operative mortality and an improvement in late secondary results. The seat of the tumor is an extremely important prognostic factor, as Cairns illustrated with reference to different cerebral regions. Tumors situated in vital portions of the brain are not amenable to direct surgical intervention. Many such tumors, however, can be successfully treated by conservative surgery and by irradiation. A clearer concept of the limitations of the surgical approach to cerebral tumors that lie in the more vital portions will in future conduce to better neurosurgical results. Clovis Vincent of Paris next discussed the therapy of the subacute and the chronic brain abscess. A fourth paper was read by Herbert Olivecrona of Stockholm on surgical treatment of Meniere's disease.

The first speaker of the afternoon session was Nobel prize winner Otto Loewi of Graz, his theme being "The Chemical Transmission of Nervous Action." Loewi has previously demonstrated that the efficacy of a stimulus of the cardiac nerves comes about through liberation of certain substances at the nerve termination, which in its turn elicits nervous stimulus. Lately he has found that this phenomenon applies both to the sympathetic nerves and to the spinal nerves. The substances liberated are acetylcholine and epinephrine. It could be observed that the liberation of substances takes place at the nerve termination itself in the following manner: The nervous stimulus releases the substances from restraint, whereupon they become diffusible and therewith effective. The liberated substances have their point of attack directly on the reactive organ. These more recent observations of Loewi represent a new notable landmark in the progress of his work. Laruelle, director of the Centre Neurologique, Brussels, then spoke on the pathophysiology of asthma. He distinguished the central, peripheral and muscular types of asthma. On this differentiation he bases

his therapeutic principles. The final speaker of the day was Iselin of Basel, who discussed rheumatism and the sympathetic. He attempted an explanatory outline of the whole problem of rheumatism.

The third day was dedicated to "General Problems." The first lecturer, the Basel gynecologist Labhardt, discussed the interrelation of obstetrics and the problems of population. He cited statistical records of the Woman's Hospital, Basel, which go back seventy years and more and which illustrate the strong influence of obstetrics on the census figures. In this connection he touched on the problem of birth control. Robert Rosle, pathologic anatomist of Berlin, then spoke on the familial behavior of tuberculosis and syphilis. Necropsy records of married couples and blood relations were systematically assembled and collated with respect to the problem of familial behavior of the two most important diseases of the people. Among the pertinent considerations is that of special organotropic strains of the causative organisms and of organic predispositions to attack. With respect to syphilitic married couples, the observation that the death of one spouse was usually followed after no great interval by that of the other led to the presumption of a similarity of agent. The high incidence of congenital syphilis among siblings was regarded in the same light. Yet, apart from rare exceptional instances, no evidence of an identity in the disease was manifested among marriage partners or in congenital syphilis as observed among siblings. On the whole, familial syphilis presents the same variegated and chequered picture as extrafamilial syphilis. With respect to tuberculosis, the necropsy reports on 162 married couples were compared, in these cases one or both of the spouses were tuberculous. The important datum was established that in fifty-nine cases of fatal tuberculosis in one partner the other partner did not succumb to the disease. This fact and instances of specially marked resistance among blood relatives indicate the possibility of a higher immunity against tuberculosis among human beings. Repetition in families of similarly located tuberculosis is rare (207 families were studied). An identity of pulmonary tuberculosis among siblings or among parents and children on the basis of Turban's classification is rejected by the author. A critical attitude was assumed toward the question of specific hereditary predispositions and a warning was sounded against overevaluation of hereditary-constitutional factors.

Wilhelm Falta of Vienna next lectured on the pathology of the thyroid. He pointed out among other things that diiodo tyrosine (3,5 diiodo-4-oxyphenylalanine) exerts only a thyroxine-like effect in myxedema if administered intramuscularly or intravenously in massive doses, in exophthalmic goiter, on the contrary, large doses of the same substances act like compound solution of iodine in that they restore to the thyroid the capability of the latter for storage of colloid and effective substance, a function temporarily inhibited by this disorder. Falta discussed the toxic effects of thyroid hormone, which may be present in the diencephalon and on account of which stronger doses of diencephalic narcotics exert favorable influences in exophthalmic goiter. Rudolf Nissen of Istanbul described his work in cardiac surgery with reference to heart wounds, valvular lesions (results extremely unfavorable), massive pulmonary emboli (operative treatment of this condition is so perilous that it should be resorted to only as a last resort), coronary sclerosis and the sequels of pericarditis. The clinical results of total thyroidectomy in cases of badly decompensated valvular lesions are good, although to be sure myxedematous manifestations may follow. K. F. Meyer of San Francisco then exhibited his excellent motion pictures on psittacosis and thus ended the day's program.

The fourth day's sessions were held at the clinics of the medical school in Berne. Emil Bürgi, pharmacologist, spoke first on the action of vegetable coloring matter on injured and

diseased skin In artificially produced lesions, chlorophyll shows itself superior to all other types of vegetable coloring matter Observations of patients with disease of the skin at the Berne Dermatologic Clinic have in general confirmed the earlier data

The theme on the fifth day was "Carbohydrate Metabolism" Leopold Lichtwitz of New York discussed disturbances in the regulation of carbohydrate metabolism The latter depends not only on the amount of the insulin secretion but also on the sensitivity to insulin of the organs affected The insulin value is however, not constant but is rendered variable by a group of factors and above all by the influence of the hypophysial-diencephalic complex The speaker cited several disorders in which the foregoing phenomena may be observed acromegaly, Simmond's disease, mesencephalitis, chronic arthritis and renal diabetes He further discussed disorders of the sympathetic nervous regulation Finally he considered the significance of blood sugar regulation in migraine and lipid nephroses and cited certain data with regard to spontaneous hypoglycemia H C Hagedorn provided a most impressive summary of his research on protamine insulin, with especial reference to his most recent studies Last of all, Georges Bickel of Geneva discussed spontaneous hypoglycemia, a problem with which he has been particularly concerned

On the final day of the congress, Hans von Meyenburg of Zurich lectured on chondrogenic skeletal diseases He has made a special study of the cartilaginous tissue His talk dealt principally with disorders in which a primary disease of the cartilage elicits reactions in certain portions of the osseous skeleton

BUDAPEST

(From Our Regular Correspondent)

Oct 6, 1937

The Annual Medical Week

Prof Baron Alexander Koranyi read a paper at the Annual Medical Week on the role of the circulatory system in growing old According to statistics of the Metropolitan Life Insurance Company, hypertension as a cause of death is four times as frequent as cancer Krehl in the first edition of his "Pathologische Physiologie" shows clearly how the vasomotor regulation of the blood stream spares the heart, lest the locally and transiently increased demand shall encumber that organ According to Thoma, the average weight of the heart increases from 316 to 331.8 Gm between the ages of 50 and 70 years According to Muller, the heart reaches the maximum weight, in proportion to the body weight, in women between 60 and 70 and in men between 70 and 80 The investigations of Muller on the hearts of old people showed that the weight of the musculature of the auricle in comparison with that of the ventricle continues steadily to increase from the thirtieth year of life

CORONARY THROMBOSIS AND TRANSITIONAL GLYCOSURIA

At the same meeting, Dr Lajos Horvay reviewed literature showing that some observers frequently found spontaneous glycosuria present in the acute stage of coronary thrombosis in nondiabetic patients He reported fourteen cases of coronary thrombosis in nondiabetic patients in whom transition—one day—glycosuria occurred in only one case He had occasion to observe this case for seven years, during which time the patient returned every six months with clocklike punctuality for control examinations, which proved that he was not diabetic In spite of this Horvay maintains the possibility that such glycosuria eventually may prove to be the manifestation of hidden diabetes The etiology of this condition is not clear Is it due to some functional or organic fault? Is it brought about by some transitory functional disturbance of the pancreas? Glycosuria occurs in only about 4 to 5 per cent of the cases of coronary thrombosis

AMAUROSIS AFTER PROLONGED USE OF QUINIDINE

Dr Braumüller reported a case in which a man, aged 54, suffered from frequent extrasystoles which, however, occurred only in the daytime The irregularity of the heart became so unbearable that once the patient attempted suicide After taking fairly large doses of quinidine for several years he noticed impairment of his eyesight An ophthalmologist found he was suffering from incipient amaurosis The patient died of an intercurrent pleurisy Braumüller said that amaurosis after large doses of quinidine may impair the vision and that no large doses should be prescribed In such cases the amaurosis may be due to spasms of the blood vessels, or be the result of a direct action on the ganglion cells of the retina To prevent the amaurosis, Strebel of Switzerland counteracts the vasodilating action of quinidine preparations by using as a vehicle for them light brandy or whisky, tea or coffee, which have a dilating effect on the cerebral vessels

WORK FOR CARDIAC PATIENTS

Dr Hasenfeld said that one of the important questions that have to be settled in the treatment of a patient with cardiac disease is the amount of work which he is able to perform It is the opinion of cardiologists that patients with compensated rheumatic heart disease are capable of more work than patients with similar degrees of cardiac syphilis or cardiosclerosis, because the former is a stationary lesion or at all events a less progressive lesion than the latter two Hasenfeld considered various occupations, and he concluded that no one kind of work can be recommended indiscriminately to cardiac patients but that each case must be gone into carefully in detail In his opinion, aortic regurgitation is compatible with good exercise tolerance (the cases he mentioned being rheumatic and not syphilitic) and also that in cases of mitral stenosis the exercise tolerance is good Naturally, in both those types of post-rheumatic heart disease the tendency is to a slow downward progress, so that the years of activity are in general shorter by several decades than those of the average healthy man Yet he mentioned the case of a woman who, acquiring aortic and mitral disease of rheumatic type at 23, led an active and useful life until she died at 54 Hasenfeld urged the adoption of the system used in America where heart clinics have been established in several large centers wherein the patient's capacity for work is tested After this a suitable employment is, if possible, found for the patient The value of such an organization is enormous The patient is all the better for the work, and so is the state, which gets a certain production from the man in exchange for supporting him

Marriages

ADLAI EWING STEPHENSON LILL, Richmond, Va., to Mrs Sarah Bugg Gholson in Henderson, N C, October 23

FRANCIS MARION DANIELS JR to Miss Frances Louise Schaefer, both of Greenville, S C, October 30

HENRY ALFRED BARRETT, New York, to Miss Rutli Silsby Marvott of Pawtucket, R I, in October

EDWARD SPENCER COWLES, New York, to Miss Lorraine Posey of Henderson, Ky, November 11

MAURICE L HORWITZ, Oakland Calif, to Miss Georgiana Lewis of San Francisco October 24

GORDON TAYLOR BURNS Chicago, to Miss Mildred Birmingham of Beryon, Ill, October 9

JAMES H HOLLIMON, Houston, Texas, to Miss Lora Sherman of Picayune Miss, October 6

CHARLES LOUIS GILBERT to Miss Minnie Fox Hopkins both of New York, October 23

ELAN MANSFIELD BARTON to Miss Jane Purvis High both of Chicago October 16

GLEN I ALLEN to Miss Dona Luke both of Peoria Ill September 25

Deaths

William Lincoln Noble ☉ Chicago, Rush Medical College, Chicago, 1888, member of the House of Delegates of the American Medical Association, in 1912, 1914 and 1915, an Affiliate Fellow of the American Medical Association, formerly member, advisory commission, Illinois Department of Registration and Education, past president of the Illinois State Medical Society and the Chicago Ophthalmological Society, at one time chief of staff of the Illinois Charitable Eye and Ear Infirmary, and superintendent of the Chicago State Hospital, on the staff of the West Side Hospital, past president and formerly member of the board of trustees of the University of Illinois, aged 76, died, October 14, at his home in Evanston, Ill., of bronchopneumonia

Louis Gross, New York, McGill University Faculty of Medicine, Montreal, Que., Canada, 1916 member of the American Association of Pathologists and Bacteriologists and the American Society for Experimental Pathology, director of laboratories of the Mount Sinai Hospital, in 1937 was awarded the bronze medal by the American Medical Association for an exhibit illustrating experimental studies on the blood supply to the heart in relation to coronary occlusion, aged 42, was killed, October 17, in an airplane accident

Henry Herbert Yerington, Palo Alto, Calif., Columbia University College of Physicians and Surgeons, New York, 1908, at one time associate clinical professor of pediatrics, Stanford University School of Medicine, San Francisco instructor in pediatrics at the Cooper Medical College, 1910-1911, formerly visiting pediatrician to the San Francisco Hospital and assistant on the visiting staff of the Children's Hospital, San Francisco, aged 57, died, August 30, in a sanatorium at San Jose

Nathan Winslow ☉ Baltimore, University of Maryland School of Medicine, Baltimore, 1901, professor of clinical surgery at his alma mater, member of the Southern Surgical Association, fellow of the American College of Surgeons, served during the World War, on the staffs of the University Hospital, Franklin Square Hospital and the West Baltimore General Hospital, aged 58, died, October 7, in St Luke's Hospital, Richmond, Va., of injuries received in an automobile accident

Arthur Betts ☉ Spokane, Wash., University of Illinois College of Medicine, Chicago, 1915, fellow the American College of Physicians, member of the American Roentgen Ray Society and the Radiological Society of North America, served during the World War, president-elect of the Washington State Medical Association, on the staffs of the Deaconess and St Luke's hospitals, aged 45, died suddenly, October 17

Elmer Burt Coolley ☉ Danville, Ill., Rush Medical College, Chicago, 1889, past president of the Illinois State Medical Society and the Vermilion County Medical Society, in 1918 member of the House of Delegates of the American Medical Association, for many years president of the Illinois Tuberculosis Association, aged 70, on the staff of the Lake View Hospital, where he died, October 12

Jonas Curtus Lyter ☉ St Louis, St Louis University School of Medicine 1907, member of the House of Delegates of the American Medical Association in 1922, 1924 and 1925, fellow the American College of Physicians, formerly assistant professor of medicine at his alma mater, on the staff of St Anthony's Hospital, aged 54, died, October 9, of heart disease

Frank J Schleier ☉ Omaha, John A Creighton Medical College, Omaha, 1904, associate professor of surgery at his alma mater, formerly county physician and city fire department surgeon, for many years on the staff of St Joseph's Hospital, aged 61, died, September 11, of coronary thrombosis, arteriosclerosis and diabetes mellitus

Robert William Bainbridge Mayo ☉ Baltimore Johns Hopkins University School of Medicine, Baltimore, 1903, formerly instructor in clinical medicine at his alma mater, served during the World War, medical director of the Home for Incurables, aged 53, died, October 21, in the Union Memorial Hospital, of esophageal constriction

Clinton Anthony Benzie, Chicago University of Illinois College of Medicine, Chicago, 1927, member of the Illinois State Medical Society, a physician for the child welfare bureau, city board of health, on the staff of St Margaret's Hospital Hammond Ind aged 40, was killed, September 8, when he was struck by an automobile

Francis William O'Connor, New York, M.R.C.S., England and L.R.C.P., London 1907, associate professor of medicine, Columbia University College of Physicians and Surgeons, associate attending physician to the Presbyterian Hospital, aged 53, died, October 3, following an operation for intestinal obstruction

Charles Wesley Worthen, White River Junction, Vt., University of Vermont College of Medicine, Burlington, 1893, Hahnemann Medical College and Hospital, Chicago 1894 aged 68, died, August 23, in the Mary Hitchcock Memorial Hospital, Hanover, N H., following an operation for appendicitis

Alexander Odell Snowden, Peekskill, N Y., College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1877, member of the Medical Society of the State of New York, on the staff of the Peekskill Hospital, aged 83, died, September 20, of coronary thrombosis

Richard Bartlett Oleson ☉ Lombard, Ill Northwestern University Medical School, Chicago, 1893, fellow of the American College of Physicians, formerly county coroner, aged 67, died, August 6, at the Johns Hopkins Hospital, Baltimore, of benign prostatic hypertrophy and staphylococcal septicemia

Overton Hobart Swango, Jackson, Ky., Kentucky School of Medicine, Louisville, 1903, member of the Kentucky State Medical Association, served during the World War, aged 64, died, August 14, in the Veterans Administration Facility, Lexington, of arteriosclerotic heart disease

Erwin Golly MacFarland ☉ Utica, N Y., Baltimore Medical College, 1908, member of the American Urological Association, served during the World War, aged 52, on the staff of the Faxon Hospital, where he died, September 9, of mitral stenosis and myocarditis

Arthur Boyd Blinn, Loomis, N Y., Columbia University College of Physicians and Surgeons, New York, 1929, member of the Medical Society of the State of New York, on the staff of the Loomis Sanatorium, aged 33, died, August 30, of chronic pulmonary tuberculosis

Theodore P Livingston, Plattsmouth, Neb., Omaha Medical College, 1888, in 1909 a member of the House of Delegates of the American Medical Association, aged 73, died, September 7, in the Immanuel Hospital, Omaha, of coronary sclerosis and bronchopneumonia

Leon Edward Whetsell, Bloomington, Ind., Louisville (Ky.) Medical College, 1903, served during the World War, member of the police board, aged 57, died, August 23 in the Methodist Hospital, Indianapolis, of coronary occlusion and arteriosclerosis

Frederick William Delmage, Hermon, N Y., McGill University Faculty of Medicine, Montreal Que., Canada, 1897, member of the Medical Society of the State of New York, aged 66, died, August 16, of chronic nephritis and cerebral hemorrhage

William Charles Hands, Washingtonville, N Y., College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1882, aged 79, died September 8 of hypertrophic cirrhosis of the liver and chronic myocarditis

William Elry Caldwell ☉ Suffield, Conn., Baltimore Medical College, 1894, for many years served as a member of the town school committee, health officer, aged 67, on the staff of the Springfield (Mass.) Hospital, where he died, August 18

Frank Blinn Dorsey ☉ Keokuk, Iowa, College of Physicians and Surgeons, Keokuk, 1881, for many years on the staffs of the Graham Protestant Hospital and St Joseph's Hospital, aged 79, died, September 8, of chronic hepatitis

Thomas S Davis, Plainfield, N J., Hahnemann Medical College of Philadelphia, 1884 for many years on the staff of the Muhlenberg Hospital, aged 84 died, September 12, of cerebral embolism, chronic prostatitis and duodenal ulcer

William Jacob Shenberger, Windsor Pa., Jefferson Medical College of Philadelphia, 1904, member of the Medical Society of the State of Pennsylvania, aged 61, died August 20, of cerebral hemorrhage and carcinoma of the esophagus

William S Bentley, Sioux Falls, S. D., Hahnemann Medical College and Hospital, Chicago, 1893, member of the South Dakota State Medical Association, on the staff of the Veterans Administration, aged 66, died, August 29

Carl McLain Vermillion ☉ Pratt Kan Tulane University of Louisiana School of Medicine, New Orleans 1925 formerly county health officer, on the staff of the Ninnescah Hospital, aged 40, died, August 12 of nephritis

Everett Elmer Speaker ☉ Lake View Iowa State University of Iowa College of Homeopathic Medicine Iowa City

1897, formerly member of the state conservation commission, aged 60, died, August 30, of coronary sclerosis

Vernon Stevens Wilkinson, Cardiff, Md., University of Maryland School of Medicine, Baltimore, 1901, aged 63, died August 31, in the William Beaumont General Hospital, of nephritis, pulmonary tuberculosis and uremia

Elmer Dwight Strong @ El Paso, Texas, Hahnemann Medical College and Hospital, Chicago, 1901, aged 63, died August 31, in the William Beaumont General Hospital, of nephritis, pulmonary tuberculosis and uremia

William Spencer Ryan, Chicago, Rush Medical College, Chicago, 1895, also a dentist, served during the World War, aged 68, died, October 23 in the Veterans Administration Facility, Hines, Ill., of cerebral hemorrhage

Charles St V Zimmerman, Asheville, N C., National University Medical Department, Washington, D C., 1895, aged 68 died, August 17, of coronary thrombosis and colon bacillus infection of the urinary tract

Eljah Sherman Lake @ Chicago, Loyola University School of Medicine, Chicago, 1921, aged 50, on the staff of the Peoples Hospital, where he died, August 22, of chronic myocarditis and hypertension

William C Stirling, Sulphur Springs, Texas, Atlanta Medical College, 1884, past president and secretary of the Hopkins County Medical Society, aged 82, died, August 14, of cerebral hemorrhage

Solon W Merrill, Flushing, N Y College of Physicians and Surgeons, Baltimore, 1907, aged 56, died, September 15, at his home in Huntington, of hypertrophy of the prostate and pulmonary embolism

Helen West, Meriden, Conn., Boston University School of Medicine 1896, member of the Connecticut State Medical Society, aged 69, died, August 22, of cerebral hemorrhage and lobar pneumonia

August F G E Oberbeck, New York, New York Homoeopathic Medical College and Hospital, 1905, aged 69, was found dead, August 27, of coronary sclerosis and chronic myocarditis

Henry Hobert Bradley, Attica, N Y Albany (N Y) Medical College 1892 veteran of the Spanish-American War, aged 67, died, September 19, of chronic myocarditis and bronchitis

Walter Holmes Oliver, Monroe, N Y University of Pennsylvania Department of Medicine Philadelphia, 1909, aged 53 died, August 19, of chronic nephritis and chronic myocarditis

Marcus E Babcock Bath, N Y, University of Buffalo School of Medicine, 1884 aged 80, died, September 2, of chronic arteriosclerotic nephritis and chronic osteoarthritis

Joseph McDowell Brewer, El Dorado Ark Vanderbilt University School of Medicine, Nashville Tenn, 1882, member of the Arkansas Medical Society, aged 77 died, August 27

John Stamm, Toledo, Ohio, Ohio Medical University, Columbus, 1898, member of the Ohio State Medical Association, aged 68, died suddenly August 13, of heart disease

Rosella Cynthia Wilder, Buffalo University of Michigan Homoeopathic Medical School, Ann Arbor, 1884, aged 79, died, August 12, of coronary thrombosis and arteriosclerosis

Charles Lucas Duncan, Beaufort, N C., University of Maryland School of Medicine, Baltimore 1902, aged 65, died September 4, of arteriosclerosis and partial hemiplegia

George Morton Sturgell, Fort Gay, W Va Kentucky School of Medicine, Louisville 1908 aged 54 died, August 22, in the Veterans Administration Facility, Huntington

David Alphonsus De Vanny, Long Beach, N Y University of Maryland School of Medicine Baltimore, 1905 aged 55 died, September 3 of pulmonary tuberculosis

Bertrand Hiram Hopkins, Aver, Mass Tufts College Medical School, Boston 1897, member of the Massachusetts Medical Society aged 64 died August 13

Edward Samuel Silvera Jr Orange N J, Howard University College of Medicine, Washington D C 1932 aged 31 died August 14 of pulmonary tuberculosis

Francis M Davis, Tooele, Utah, Medical College of Indiana, Indianapolis, 1883 formerly mayor, and city and county physician aged 77 died in August

Charles Harmon Breesee, Owego N Y, Hahnemann Medical College and Hospital Chicago 1891 aged 71 died, September 13 of chronic myocarditis

Samuel Everett Jones, Indianapolis, Indiana Medical College, School of Medicine of Purdue University, Indianapolis, 1906, aged 62, died, August 29

Frank Mathias Cochems @ Chicago, Rush Medical College, Chicago, 1928, aged 35, died, August 1, in Mundelein, Ill., of acute coronary thrombosis

Richard Turnbull Kidd, Atwood, Ont, Canada, University of Western Ontario Medical School, London 1931, aged 32, was drowned August 15

John F Lacewell, Dalton, Ga., Atlanta Medical College, 1886, member of the Medical Association of Georgia, aged 80, died, August 19

Edwin Horace Miller, Oakland, Calif University of Pennsylvania Department of Medicine, Philadelphia, 1888, aged 77, died, August 22

Edwin Peppers Hawley, Claremont Calif, Western Reserve University Medical Department, Cleveland, 1884, aged 81, died, August 4

John Walter Williams, Minneapolis, Minneapolis College of Physicians and Surgeons, 1907, aged 52, died, August 22, of heart disease

Denis J H Berthiaume, Montreal, Que, Canada, Victoria University Medical Department, Coburg, Ont, 1890, aged 69, died August 24

Mary Englebert Teague, Los Angeles, Northwestern University Woman's Medical School, Chicago, 1895, aged 77, died, August 17

Fred Raymond Funk, Dresden, Kan., Ensworth Medical College, St Joseph, Mo, 1906, aged 61, died, August 25, of heart disease

Oren V Hembree, Greenfield, Mo., Louisville (Ky) Medical College, 1895, aged 82, died, August 24, of cerebral hemorrhage

Thomas C Thompson, Jacksonville, Fla., Kentucky University Medical Department, Louisville, 1903, aged 59, died, August 31

Anna May Allen Small, Oakland, Calif, Hahnemann Medical College and Hospital, Chicago, 1897, aged 66, died, August 29

Roy John Farmer, Toronto Ont, Canada, Western University Faculty of Medicine, London, 1916, aged 50, died, August 25

Fred S Greenwood, St Catharines Ont Canada McGill University Faculty of Medicine, Montreal, Que, 1878, died, August 4

Thomas Jefferson Jackson, Liberty Tenn, Vanderbilt University School of Medicine, Nashville, 1884 aged 77, died, August 5

Henry William Weimar, Vicksburg, Miss, Memphis (Tenn) Hospital Medical College, 1901, aged 59, died August 9

Wilber Franklin Brown, St Mary's Ont, Canada, University of Toronto Faculty of Medicine, 1893, died, August 14

Judson Waldo Paul, Santa Clara, Calif Bellevue Hospital Medical College, New York, 1891, aged 76 died, August 6

Robert John McNeill, Tignall Ga University of Georgia Medical Department, Augusta, 1902, aged 62, died, August 17

Henry Lee Stevens, Laramie Wyo, Long Island College Hospital, Brooklyn, 1878, aged 85, died August 12, of senility

James Freeborn McKee, Thornbury, Ont, Canada, University of Toronto Faculty of Medicine, 1906, died, August 26

Sheffield Smith, North Providence, R I, Harvard University Medical School, Boston, 1877 aged 83, died, August 15

Herbert Leslie Barber, Noelville, Ont, Canada, Trinity Medical College, Toronto, 1892 aged 70, died, August 21

George Knox Osborn, Covelo Calif, California Medical College San Francisco 1895 aged 73, died August 8

Nelson Ford Sutton, Norwood Ont Canada, University of Toronto Faculty of Medicine 1903 died August 21

Samuel Flowers Parker, Pink Hill, N C., Medical College of Virginia Richmond 1901 aged 67 died August 15

Homer R Houchen, Uteia, Neb., Lincoln Medical College of Corner University, 1905 aged 56, died, August 12

Charles E Longacre, Lindsborg Kan Kansas City (Mo) Medical College 1898, aged 63 died August 31

Albert Angelo Pastene, Boston Tufts College Medical School Boston, 1901, aged 62 died August 28

Jephtha Silas Boyer, Davis Calif, Rush Medical College, Chicago 1893, aged 73 died August 17

Bureau of Investigation

MISBRANDED "PATENT MEDICINES"

Abstracts of Notices of Judgment Issued by the Food and Drug Administration of the United States Department of Agriculture

[EDITORIAL NOTE The abstracts that follow are given in the briefest possible form (1) the name of the product, (2) the name of the manufacturer, shipper or consigner, (3) the composition, (4) the type of nostrum, (5) the reason for the charge of misbranding, and (6) the date of issuance of the Notice of Judgment—which may be considerably later than the date of the seizure of the product]

Pfeiffer's Hamburg Tea—Fort Wayne Drug Co., Fort Wayne Ind. Composition Essentially plant drugs principally senna with small proportions of fennel and anise seed Represented as 'An Unfailing Preventive of Influenza' Fraudulent therapeutic claims—[N J 25054 July 1936]

Golden Chemical Compound—International Chemical Co Topeka Kan. Composition A dark reddish brown watery solution consisting of iron salts (ferric and ferrous sulfate) For diphtheritic and scarlet fever sore throat, pyorrhea erysipelas, eczema female disorders etc Not 'the most powerful germicide known' Fraudulent therapeutic claims—[N J 25061 July 1936]

Pinkham's Tablets—Lydia E. Pinkham Medicine Co. Lynn Mass. Composition In each tablet 1½ grains of sodium monobenzy succinate and 2 grains of an extract of a plant drug such as viburnum For menstrual disorders Fraudulent therapeutic claims—[N J 25062 July 1936 and N J 25837 January 1937]

Hildebrand's Gall Stone Capsules—Frank Granzow Mfg. Chemists Chicago Composition Essentially phenolphthalein oleic acid soap menthol sodium salicylate and plant fiber For gallstones gallbladder and stomach disorders etc Fraudulent therapeutic claims—[N J 25066 July 1936]

Granzow's Tonic Tablets—Frank Granzow Mfg. Chemists Chicago (Supplementing Hildebrand's Gallstone Capsules) Composition Essentially sodium sulfate an iron compound and a small proportion of strychnine coated with lime carbonate and sugar For debility nervousness sleeplessness etc Fraudulent therapeutic claims—[N J 25066 July 1936]

Kurlene Eyelash Grower—Kurlash Co. Rochester N. Y. Composition Essentially mercuric oxide salicylic acid and petrolatum with a small amount of vanillin For granulated lids as well as for growing eyelashes Fraudulent therapeutic claims—[N J 25067 July 1936]

Prescription No. 69—Home Drug Co. Minneapolis Composition Essentially glycerin with small amounts of oxgall and bile acids For gallbladder trouble gallstones and liver disorders Fraudulent therapeutic claims—[N J 25070 July 1936]

Antiseptic Capsules—DeVore Mfg. Co. Columbus Ohio Composition Essentially common salt borax baking soda salicylic acid volatile oils including cinnamon thymol and menthol with red coloring matter For tonsillitis laryngitis ulcerated throat and mouth etc Not antiseptic Fraudulent therapeutic claims—[N J 25077 July 1936]

Special Treatment for Diabetis [sic]—DeVore Mfg. Co. Columbus Ohio Composition Essentially Rochelle salt and water flavored with cinnamon oil Fraudulent therapeutic claims—[N J 25077 July 1936]

Gold Seal Vegetable Compound for Women—DeVore Mfg. Co. Columbus Ohio Composition Essentially extracts of plant drugs including berberis and laxatives with a benzoate, a salicylate saccharin phosphoric acid alcohol (14 per cent by volume) and water For female disorders Fraudulent therapeutic claims—[N J 25077 July 1936]

Dovola Carbolic Salve—John J. Smith trading as Dovola Co. Chicago Composition Carbolic acid (3 per cent) in an ointment base For sores ulcers itch etc Fraudulent therapeutic claims—[N J 25078 July 1936]

Dovola Ointment Zinc Oxide—John J. Smith trading as Dovola Co. Chicago Composition Zinc oxide (not more than 17½ per cent) For inflammations such as eczema Fraudulent therapeutic claims—[N J 25078 July 1936]

Dovola Throat Gargle—John J. Smith trading as Dovola Co. Chicago Composition Small proportions of ferric chloride and potassium chlorate in a mixture of water and glycerin Fraudulently represented as an effective treatment for sore throat—[N J 25078 July 1936]

Dovola Wild Cherry Expectorant—John J. Smith trading as Dovola Co. Chicago Composition Essentially extracts of plant drugs glycerin sugar and water For coughs croup bronchitis etc Fraudulent therapeutic claims—[N J 25078 July 1936]

Dovola Vegetable Laxative Tablets—John J. Smith trading as Dovola Co. Chicago Composition Extracts of plant drugs including nuxvomica Fraudulent therapeutic claims—[N J 25078 July 1936]

Dovola Special Tonic Pills—John J. Smith trading as Dovola Co. Chicago Composition A phosphide was found For purifying the blood and restoring "shattered nerve forces" Fraudulent therapeutic claims—[N J 25078 July 1936]

Dovola Eczema Ointment—John J. Smith trading as Dovola Co. Chicago Composition A yellow semi solid containing bismuth subcarbonate zinc oxide and sulfur in an ointment base Fraudulent therapeutic claims—[N J 25078 July 1936]

Dovola Special Pills—John J. Smith, trading as Dovola Co. Chicago Composition Extracts of plant drugs and salt peter For Bright's disease, diabetes gallstones leukorrhea, gleet etc Fraudulent therapeutic claims—[N J 25078 July 1936]

Dovola Creol—John J. Smith trading as Dovola Co. Chicago Composition Water soap phenols, glycerin and a small amount of neutral oils Skin cure Fraudulent therapeutic claims—[N J 25078 July 1936]

Shavegrass Cut—Regina Rieppel trading as Miss R. Regina New York Composition Cut equisetum (horsetail) For kidney and bladder disorders ulcers, cancer etc Fraudulent therapeutic claims—[N J 25079 July 1936]

Healdline Health Salts—John J. Smith trading as Dovola Co. Chicago Composition Essentially baking soda (28.5 per cent) epsom salt (21.3 per cent) cream of tartar (22.4 per cent) tartaric acid (17.9 per cent) sodium phosphate (8.8 per cent) and starch (1.4 per cent) For biliousness, boils, pimples, rheumatism etc Fraudulent therapeutic claims—[N J 25078 July 1936]

LaClyde Lemon Vegetable Soap—Clyde Collins Chemical Co., Memphis Tenn. Composition Chiefly sodium soap and a fluorescent dye For pimples and other skin disorders Not antiseptic Fraudulent therapeutic claims—[N J 25082 July 1936]

Ru Co. Female Tonic—Clyde Collins Chemical Co. Memphis Tenn. Composition Essentially water alcohol sugars, plant extracts (bearing valertanic acid) and a small amount of iron and benzoic acid Fraudulent therapeutic claims—[N J 25082 July 1936]

Hygeen Tablets—John B. Petrie trading as the B. V. Laboratories and the Purity Products Co. Chicago Composition Baking soda tartaric acid and small amounts of silica, starch and an organic chlorinated product such as chloramine T. Fraudulently represented as a vaginal germicide—[N J 25093 July 1936]

Cholax Brand Pulvis Effervescens Salts Phosphatis Comp. (Kelvan)—George T. G. Duke and Mary W. Lambert, trading as Crescent Kelvan Co. Philadelphia Composition Granular material consisting of sodium phosphate anhydrous (15.8 per cent) sodium sulfate anhydrous (19.6 per cent) epsom salt anhydrous (10.6 per cent) and an effervescent base of baking soda, citric and tartaric acids. Fraudulently represented as a remedy for rheumatism and stomach, liver and kidney disorders—[N J 25094 July 1936]

Ru Co. Wonderful Health Laxative—Clyde Collins Chemical Co. Memphis Tenn. Composition Chiefly dehydrated Glauber's and epsom salts For sallow skin pimples blotches abnormal weight etc Fraudulent therapeutic claims—[N J 25082 July 1936]

B. X. Special Multi Strength Treatment—John B. Petrie trading as the B. V. Laboratories and the Purity Products Co. Chicago Composition A brown liquid containing chiefly apio and a small amount of ergot For menstrual disorders Fraudulent therapeutic claims—[N J 25093 July 1936]

B. X. Monthly Relief Compound—John B. Petrie, trading as the B. V. Laboratories and the Purity Products Co. Chicago Composition Pills chiefly containing iron sulfate aloe ergot and a terebinthinate oil resembling oil of savin For female disorders Fraudulent therapeutic claims—[N J 25093 July 1936]

B. X. Menstrua—John B. Petrie, trading as the B. V. Laboratories and the Purity Products Co. Chicago Composition Capsules and tablets the first containing apio and a small amount of savin oil and the second containing extracts of plant drugs including a laxative For female disorders Fraudulent therapeutic claims—[N J 25093 July 1936]

LaClyde Lucky Bleaching Ointment—Clyde Collins Chemical Co. Memphis Tenn. Composition An ointment containing ammoniated mercury (3 per cent) For pimples tetter eczema etc Fraudulent therapeutic claims—[N J 25082 July 1936]

Kellogg's (Dr. J. D.) Asthma Remedy—Northrop & Lyman & Co. Inc. Buffalo N. Y. and Toronto Composition Powdered plant material including stramonium Fraudulent therapeutic claims—[N J 25078 July 1936]

Freses Hamburg Tea—Coffin Redington Co. San Francisco Composition Essentially ground plant material including senna lavender and coriander For indigestion dyspepsia blood and skin ailments due to constipation etc Fraudulent therapeutic claims—[N J 25093 July 1936]

Nature's Mineral Food—Nature's Mineral Food Inc. and Perry B. Smith Indianapolis Composition Essentially the phosphate carbonate and chloride of calcium with epsom salt common salt and small amounts of iron sulfate potassium iodide sodium salicylate and free sulfur For blood stomach and kidney disorders diabetes arthritis high blood pressure etc Fraudulent therapeutic claims—[N J 25091 July 1936]

Correspondence

THE SCARLET FEVER PATENTS

To the Editor —The special article entitled "Medical Patents" published in the November 6 issue of THE JOURNAL implies that the Scarlet Fever Committee has interfered with research through its methods of administering the patent on scarlet fever toxin and scarlet fever antitoxin. In reply to this implication and the author's statement that such effect is probably due to the personnel of the committee, it should be stated that application for a patent was not made until after receipt of the following letter from the director of the National Institute of Health, and after consultation with the Council on Pharmacy and Chemistry of the American Medical Association, which concurred in the advice given in this letter

TREASURY DEPARTMENT
United States
Public Health Service
Washington D C
November 12 1924

Dr Geo F Dick
% John McCormick Institute for Infectious Diseases,
637 South Wood Street Chicago Illinois

Dear Doctor Dick —

I am amplifying somewhat my telegram of this date in reply to yours sent from Columbus Ohio yesterday

Some months ago when the streptococci acquired new interest in relation to scarlet fever we stated to licensed manufacturers in response to inquiries that in our opinion there was no objection to marketing packages of antistreptococcus serum for which license was held in such way that it would indicate that the scarlet fever type of organism had been utilized in the immunization of the animals. It is possible that we were in error in this but as I said in my telegram I believe it would be necessary to have a legal decision to settle this point

I am sending you a copy of the Biologies regulations and in the back of the pamphlet you will find the law there is nothing in the law which actually enables the government to prevent the placing of unlicensed preparations on the market the law however provides adequate penalties for violation and is enforceable through the usual court proceedings the action I take it being brought in the United States court

The more we have considered the requirements which you feel should be met the more we have been impressed with the difficulties of commercial production just at present Dr Dyer and I feel that the best and perhaps the only way to comply completely with your requirements would be for yourselves to take out patents on your preparations handling the patents in any manner you see fit. This would give you the opportunity to permit the manufacture in any limited number of places in accordance with your own judgment. I take it that there is no difficulty in this from the ethical point of view because according to our understanding this is just what was done by the Toronto group of research workers in connection with Insulin

With kindest regards I am

Very truly yours

G W McCoy
Director

After decision to act on Dr McCoy's suggestion, the Secretary of the Council was asked if the Council would consent to administer the patent. The answer was in the negative. He was then consulted as to the desirability of assigning the patent to a university, to a research institute or to a committee and advised the formation of a committee for the purpose of administering the patent as Dr McCoy had suggested. When approached on the advisability of granting an exclusive license, as had been done in the case of the insulin patent, he pointed out that while an exclusive license would greatly simplify the problems of administration, it would work undeserved hardship on unlicensed manufacturers and give the possessor of the exclusive license an unearned advantage, that it would also prevent the unlicensed manufacturers acquiring experience in the manufacture of products which they would eventually be expected to furnish

In accordance with this advice, the Scarlet Fever Committee when organized decided to offer licenses to all reputable commercial manufacturers licensed by the United States Public Health Service on exactly the same terms and to grant free licenses to health departments, although this decision involved the maintenance of a much larger and more expensive organization for testing products from all manufacturers than would have been required for testing the products of one exclusive licensee

In order to avoid price fixing and still ensure the lowest cost to the public consistent with good quality, the royalty was fixed at 5 per cent instead of the 10 per cent charged by the Insulin Committee. For some time this low fee did not furnish enough income to cover the cost of testing the numerous samples submitted by the various manufacturers. On the other hand, competition and the fact that, by reducing the price of scarlet fever products to physicians, the manufacturers were able to reduce the amount paid to the Scarlet Fever Committee, while the service they received from the committee in testing their products remained the same, resulted in the new scarlet fever materials which were more costly to manufacture selling as cheaply as diphtheria products on which there was no patent

Any implication to the effect that the Scarlet Fever Committee has interfered with research is wholly unjustified. The fact that the committee has not hampered research should be apparent to any one conversant with recent literature. In no instance has the committee suggested that even poorly conceived research by incompetent investigators be discontinued. Improvements have promptly been adopted. When fallacious results have been published, the committee has been content to meet them by scientific articles calling attention to the fallacies if they seemed of sufficient importance

An example of the freedom the scarlet Fever Committee has allowed in the field of research is furnished by the fact that the Massachusetts State Health Department, a licensee of the committee, is still distributing for the purpose of statistical research formalized scarlet fever toxin under the name of "scarlet fever toxoid." This is permitted despite publication by two members of the Scarlet Fever Committee in THE JOURNAL (Nov 3, 1934) of adequate and unrefuted evidence showing that such preparations contain no toxoid and despite the poor results the material has given in the four year trial

The Scarlet Fever Committee is heartily in accord with Dr Fishbein's suggestion that a responsible and unbiased group be formed to administer all medical patents. Such an arrangement would give uniformity in methods of administration, would relieve the discoverers of onerous duties which now interfere with further research they might accomplish, and would be an advantage to manufacturers who at present are obliged to deal with a different group for each patent under which they operate

THE SCARLET FEVER COMMITTEE

COMA IN INSULIN-HYPOGLYCEMIC THERAPY OF SCHIZOPHRENIA

To the Editor —Recent literature discussing the insulin-hypoglycemic therapy of schizophrenia indicates some confusion as to what is understood by the term coma. It is of clinical importance to have some gauge as to the onset of coma and its optimum depth. Dorland defines coma as a state of complete loss of consciousness from which the patient cannot be aroused even by the most powerful stimulation. Sakel states (Am J Psychiat 94 111 [July] 1937) that 'coma should be associated with the absence of the corneal reflex or at least with presence of a Babinski. Cameron and Hoskins (THE JOURNAL, Oct. 16 1937, p 1246) differ. They say "We usually consider somewhat arbitrarily that coma is present when the patient can no longer swallow, when, if he is turned on his side saliva tends to drool from the mouth, or when, on the eyelids being drawn up, the eyeball is found to be wandering slowly in the orbit." We read in 'A Study of Hypoglycemic Shock Treatment in Schizophrenia' by Isabel G H Wilson, M.D., 'When the corneal reflexes disappear, the patient is considered to be in coma. Loss of the light reflex of the pupil is usually regarded as an indication for the interruption of shock'

According to our own experience we have found it very difficult to say exactly when the patient was in coma. Many patients who cannot be aroused show persistent corneal and swallowing reflexes and no Babinski. Often when the swallowing reflex was gone and a variable Babinski appeared, the corneal reflex persisted. Again, drooling of saliva and free moving of the eyeball are often found before the appearance of the Babinski or loss of the corneal reflexes. When the complete absence of the corneal reflexes, however, is taken as the criterion, we have found it impossible to produce coma in many patients of the chronic type when large doses of insulin are required.

Disparities in the efficacy of the hypoglycemic treatment may well be due to different interpretations in the meaning of the term coma.

MORRIS W. BRODY, M.D.
MAX HAYMAN, M.D.
Springfield State Hospital,
Sykesville, Md.

SUGGESTIONS FOR THE POSITION FOR COMATOSE INSULIN SHOCK PATIENTS

To the Editor—The treatment of coma in insulin shock resembles surgical narcosis in several respects, one of them being the danger of aspiration of mucus due to increased secretion of saliva and the absence of pharyngeal reflexes. It is an established fact, known for generations, that aspiration in surgical narcosis is best prevented by placing the patient in a flat position, head turned, so as to permit the saliva to flow out of the mouth.

In view of that fact, it seems strange that the half upright position has been recommended for comatose insulin shock patients in some recent publications (Wilson, Isabel G. H. A Study of Hypoglycemic Shock Treatment in Schizophrenia, Board of Control, H. M. Stationery Office, 1937; Cameron, D. E., and Hoskins, R. G. Experiences in the Insulin-Hypoglycemia Treatment of Schizophrenia, THE JOURNAL, October 16, p. 1246) and doubtless in earlier papers from which they are partly compiled.

Seeing no reason to neglect precautions generally accepted in surgery, we have been placing our patients at the Neurological Hospital in a perfectly flat position, head turned, as soon as they go into coma. Our experiences have been quite satisfactory. Therefore we propose this procedure for general use in insulin shock therapy.

G. WILSE ROBINSON JR., M.D.
HEINRICH LANN, M.D.
Kansas City, Mo.

From the Neurological Hospital (the Robinson Clinic Inc.)

LETTERS OF FIELDING H. GARRISON

To the Editor—The publication of a volume of selected letters of Fielding H. Garrison is being considered. It is felt that such a volume will not only be welcome to the many friends of Garrison but will constitute a real contribution to American literature. It will present to a larger public a brilliant writer who so far has been known only to a limited group consisting mostly of medical men.

Mr. F. L. Trietsch, who was an intimate friend of Garrison, will edit the volume. Mr. Henry Mencken and I are to contribute forewords.

I wish to invite all the many correspondents of Garrison to send their letters to the Institute of the History of Medicine, Johns Hopkins University, 1900 East Monument Street, Baltimore. The letters will be copied in the institute and the originals will be returned to their owners without delay. The copies will be preserved in the institute as material for a future biography.

While Garrison was very reserved in personal contacts, he was exuberant in his letters. His moods and whatever worried

him found expression in letters. Letter writing was his way to free himself from oppressing thoughts and he not seldom passed harsh judgments on matters and people. It is needless to say that the editor will proceed very carefully in selecting the letters or passages from letters to be published.

HENRY E. SIGERIST, M.D., Baltimore

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

TREATMENT OF THE TABETIC FORM OF DEMENTIA PARALYTICA

To the Editor—A man aged 56 years has the tabetic form of dementia paralytica. Twenty years ago he was treated for tabes by the Swift Ellis method. He was given six treatments and discharged as improved when he refused to continue. He had no further antisyphilitic treatment until six years ago. At that time he developed acute manifestations of dementia paralytica and was given neosphenamine followed by spinal fluid drainage for a period of three months. His spinal fluid showed the typical gold curve of dementia paralytica as well as a positive Wassermann reaction. The blood Wassermann reaction was also positive. He refused further therapy until November 1936, when he came under my care. He had just returned from a fishing trip with 147 turkeys and was negotiating for the purchase of a whale. He complained of lightning pains in his legs and frequent attacks of paroxysmal tachycardia. His family noted personality changes and loss of judgment. Examination revealed Argyll Robertson pupils, absent knee jerks, a positive Romberg sign and extreme nervousness. The blood Wassermann reaction was 4 plus. The spinal fluid Wassermann reaction was 4 plus, and there was a positive Pandy test and a 5555541000 gold curve. The urine was normal and the hemoglobin 90 per cent. I gave him 10 cc of mixed tertiary malaria blood intravenously which was followed by chills in ten days. Treated at home he had twenty-seven temperature rises, sixteen of which reached 106 F for at least four hours each. After the first chill his lightning pains disappeared and have not returned. After six chills auricular fibrillation set in which was adequately controlled with digitalis. The malaria was interrupted with quinine late in December 1936. The urine was normal, the hemoglobin 40 per cent. Mentally he was worse than ever. January 1, 1 Gm of trypanamide was started increasing to 3 Gm weekly, with a routine weekly check of the visual fields for the first seven weeks. There was no loss of vision and no further checks have been carried out. He has now had seventeen injections of trypanamide. He received in addition six injections of 2 cc each of iodobismutol beginning January 1. The urine showed 2 plus albumin and many casts which cleared when the bismuth was stopped. Neosphenamine was started March 23 with 0.15 Gm increasing to 0.6 Gm weekly. The trypanamide and neosphenamine are given from three to four days apart. The urine continues negative, the lightning pains are gone. The tabetic gait is improved and he no longer falls with the Romberg test. He has had only two mild attacks of paroxysmal tachycardia since the start of his malaria and there has been no recurrence of the fibrillation. Mentally he has improved progressively until now he is apparently normal in his business judgment and social contacts. My tentative plans are to continue therapy as follows: two more injections of 0.6 Gm of neosphenamine completing a course of 4.65 Gm followed by a bismuth compound again for a course of ten to twelve weeks if the urine remains clear. At the same time trypanamide is to be continued uninterrupted. I shall check the spinal fluid again in December. Potassium iodide is refused by the patient. 1. What further treatment should be carried out? 2. How long should the trypanamide be continued? 3. No cardiovascular check up by x-rays or fluoroscopy has been made, is this advisable? 4. The prognosis originally given the family was poor. What are the patient's chances now for a permanent remission with adequate therapy? 5. Is it likely that the paroxysmal tachycardia was due to the syphilis and if so does malaria help this type of lesion? Any other suggestions or comments will be most welcome.

ALBERT C. DANIELS, M.D., San Rafael, Calif.

ANSWER—1. It is suggested that the correspondent stop giving neosphenamine now and not repeat it. Neosphenamine has not proved to be efficacious in parenchymatous brain and spinal cord syphilis (dementia paralytica or tabes dorsalis). In other forms of neurosyphilis (meningovascular) it may be of no advantage.

2. Trypanamide should be used once every week for the next thirteen weeks with the same precaution regarding the optic nerve heads as well as the visual fields as before. No more trypanamide after this for at least eight to twelve weeks.

3. In order to determine the type of cardiovascular disease it is important to have a fluoroscopic, flat x-ray plate and electrocardiographic study of the heart.

4. It is impossible to give any definite prognosis. From the evidence submitted it seems reasonable to believe that the

treatment has been the responsible factor in bringing about the clinical improvement. If this is true, the ultimate outcome may be favorable for some time to come. It is not possible to cure absolutely either dementia paralytica or tabes dorsalis. If the cardiovascular and renal systems remain in a good functioning state, a new course of trypanamide (from 2 to 3 Gm every week) for from twenty to thirty weeks can be started after a rest period of from eight to twelve weeks. After this some form of bismuth or mercury can be given intramuscularly twice weekly for thirty weeks.

5 If the paroxysmal tachycardia is due to syphilis, malarial therapy is definitely contraindicated.

6 During the rest period some form of electrical hyperpæxia can be given. The patient should have from six to eight treatments in which the temperature is permitted to rise to 103 to 103.6 F for at least two to four hours. A treatment may be given every second or third day.

ANKLE CLONUS IN INFANT

To the Editor—An infant boy aged 3 months has shown for the past month a bilateral clonus usually voluntarily induced by the physician but at times involuntary and without pressure applied to the foot. The reflexes are slightly hyperactive the Babinski sign is positive and there are no other pathologic reflexes. The legs are not spastic and there is no limitation of motion. There was no instrumentation at birth which occurred after only four and a half hours of labor. There was no injury to the child at any time. The ankle clonus is becoming progressively worse. Please state the possible etiology, prognosis and treatment.

MD New York

ANSWER—In a child of 3 months the plantar reflex is of limited diagnostic value. Monrad Krohn found that during the first year of life 77 per cent of children had an extensor (Babinski) response. A bilateral Babinski sign at three months is therefore considered a normal response, supposedly because the pyramidal fibers (corticospinal tract) are not yet myelinated. Bilateral ankle clonus, however, is more suggestive of organic disease of these tracts, patellar clonus, if present would almost certainly indicate an organic lesion. Ankle clonus plus a bilateral Babinski response in this patient add weight to the suggestion of a structural lesion, but at 3 months of age no diagnosis based on these signs can or should be made. Especially is this true in view of the absence of spasticity or paralysis and the history of normal easy delivery. The disease most seriously to be considered in the future is infantile cerebral palsy (Little's disease). The increase in the ankle clonus is suggestive but not diagnostic of this condition. Any discussion on prognosis and treatment is not justified until the diagnosis is at least made clear. The child should be repeatedly examined at intervals of three months.

BLOOD SEDIMENTATION RATE IN PULMONARY TUBERCULOSIS

To the Editor—Can you explain the following to me? I have had at least ten cases diagnosed as early pulmonary tuberculosis. The diagnosis was determined by history, physical examinations and x-ray examination of the chest all in adults. The blood sedimentation rate was determined in all of them prior to treatment which consisted of confinement to bed, forced feeding, cod liver oil and calcium. All gained from 15 to 20 pounds (7.9 Kg.) the cough disappeared and x-ray examination showed a deposit of calcium about the area of infection. Now the thing I cannot account for is that they all show a decidedly more rapid sedimentation rate after treatment instead of a slower one as I should expect.

EUGENE C. LOWE MD Miami Fla

ANSWER—The red blood cell sedimentation rate may be definitely increased during the development of the primary complex and again when clinical tuberculosis is present. Wallgren (*Am J Dis Child* 49:1105 [May] 1935) has shown that when fever occurs during the development of the primary complex, it is of short duration usually it does not persist longer than two or three weeks. However the red cell sedimentation rate which is increased while the fever is present usually does not reach a normal level until several weeks after the fever has disappeared.

As all these patients showed deposits of calcium about the areas of infection one might infer that the lesions represented parts of primary complexes. While it is true that calcium may be deposited in the secondary or reinfection type of tuberculous lesions apparently it is not the rule whereas in primary lesions it is a frequent occurrence. Calcium deposits have been demonstrated in primary lesions as early as four months after the lesion begins to develop. However they usually do not reach sufficient size to be demonstrated by x-ray examination until a considerably longer time has passed. If the lesions in the ten patients were primary and calcium is already in evidence one would expect that in the absence of other causes of

increased sedimentation rate it would now have reached a normal level. If the lesions were of the secondary or reinfection type, it is not unusual for the sedimentation rate to continue at a definitely increased level over a considerable period after all other symptoms have disappeared and the x-ray shadows are stationary or have decreased in size. Symptoms and x-ray shadows are not always a reliable criterion with reference to activity of a tuberculous process. Symptoms usually disappear long before activity ceases. The x-ray shadow may definitely decrease in extent and yet within the lesion which casts the shadow or even outside the shadow active lesions may persist.

Another important fact that must be borne in mind is that tuberculous lesions are rarely single. Often multiple primary complexes are laid down in various parts of the body and the secondary or reinfection type of tuberculosis may develop in other organs preceding during or subsequent to the development of pulmonary lesions. Examination of most of the other internal organs for tuberculous lesions during life is difficult and therefore active lesions in one or more parts of the body may cause the sedimentation rate to remain increased long after the pulmonary lesion has ceased to be active. Increase in the red blood cell sedimentation rate is not specific for tuberculosis. Therefore nontuberculous infections involving other parts of the body may be responsible for the increase in the sedimentation rate.

GENERALIZED MUSCULAR TWITCHINGS

To the Editor—A man aged 25 has been under constant mental strain for about seven months. One evening before some important examinations he started having muscular twitches which have persisted for one month. The twitches may start anywhere in the thigh, neck or buttocks for example and then may reappear anywhere. Thus a muscle in the neck will twitch then one in the arm, leg, buttock or eye without any sort of regularity or rhythm. The twitch never lasts more than five seconds, disappears and reappears somewhere else on the body. Sometimes a large portion of the muscle is involved and sometimes only a restricted area. These twitches are subjectively perceived but never seem to hit exactly the same place twice. There has been no muscle wasting, weakness or atrophy. They always appear when the patient is muscularly inactive and never while he is doing something that requires muscular activity such as tennis. The Wassermann and Kahn reaction tests are negative and otherwise he is a healthy adult who is prone to worry. What is the nature, etiology and treatment of this condition? MS New York

ANSWER—Transient twitches or quivering of muscles known as myokymia affecting a few muscle bundles usually without movement of the joint, constitute a fairly common symptom in patients suffering from anemia or neurasthenia. The muscles commonly involved are those around the eye, the deltoid, biceps and triceps and the glutei and the quadriceps. It is characteristic for myokymia to occur when the muscle is not in active use.

There are many intrinsic diseases of the central nervous system in which myokymia is also a symptom but they are accompanied by atrophy, paralysis, changes in the electrical reactions or alteration of the deep or superficial reflexes. Myokymia is seen in progressive muscular atrophy, amyotrophic lateral sclerosis, syringomyelia, progressive bulbar palsy and a few other chronic intrinsic degenerative conditions of the spinal cord and medulla. There is no reason to believe from the history as stated that this young man suffers from any of these serious diseases. The condition will disappear if adequate attention is paid to the patient's neurasthenia or to his anemia if this is present.

MONGOLIAN IDIOCY

To the Editor—Have there been any new developments in the treatment of mongolian idiocy? The mother insists that the child's mental condition is due to a fall shortly after birth. May the fall be the exciting factor in bringing on this condition? The child is at present 9 years old and is kept at home. What do you think should be done with such a child? MD Florida

ANSWER—A great deal of effort has been made, especially by the endocrinologists, to devise some method of treating mongolian idiocy (or, better, imbecility) but nothing new has been devised. Institutional care is perhaps not as imperative in cases of this sort as in others but the social factors should always be taken into consideration. Most psychiatrists particularly those who deal with mental defectives, are familiar with the statement made by parents that the child's mental deficiency is due to a fall. This very likely is due to some wishful thinking that nothing in the heritage which they give to the child is responsible for the condition. Since the etiology of this type of mental deficiency is unknown it is impossible to say that the fall had no connection with it but since certainly 99 per cent of mongolian idiots are obviously such at birth it is highly improbable. As for the disposition of such a case the decision must lie with the persons concerned. If the child is a

menace in the community and it is difficult for the parents to control it, institutional care is indicated for the safety of all concerned. Another consideration which is very important is whether there are any siblings, brothers and sisters who go to school are likely to be taunted about having an imbecile in the family. A great deal more care is lavished on such a child, resulting in the neglect of the normal children. On the other hand, there are occasional cases of only children whose parents get a great deal of satisfaction out of caring for the defective child, and they do much more for such a child than could be done for him in an institution.

PYOMETRA

To the Editor—A white woman, aged 33 a quinquipara with five normal deliveries, was operated on nine months ago for a relaxed perineum, moderate prolapse of the right cystic ovary and a diseased appendix. The operation consisted of a diagnostic curettage (pathologic examination gave negative results) repair of the vaginal outlet, right salpingo-oophorectomy, left salpingectomy Coffey suspension of the uterus and appendectomy. Since the operation the patient has had a continuous discharge (before the operation she had no discharge) and profound continuous pain in the lower part of the abdomen mostly in the midline. The menses occur every three weeks last from six to seven days and contain large and small clots having a fleshy and at times putrid odor. Following the period the discharge is brownish for two or three days then greenish tinged and then a profuse yellowish mucoid purulent discharge requiring three or four napkins daily because of the discomfort of this acrid discharge. No special organisms or Trichomonas have been found. Examination revealed the perineum healed the cervix clean, hence the discharge must be coming from the body of the uterus. Bimanual examination was difficult owing to the obesity (200 pounds, 90 Kg) of the patient. However the uterus was freely movable but tender on palpations in fact, the whole lower part of the abdomen was tender. No masses were elicited. Please omit name.

M D Pennsylvania

ANSWER—The probable cause of the patient's profound pain in the lower part of the abdomen and the purulent vaginal discharge is a pyometra, or accumulation of pus, in the uterine cavity. This may be due to a stricture of scar tissue in the internal os or anywhere else along the cervical canal, the result of trauma of a strenuous dilation and curettage. The frequent menses may be due to interference in the blood supply of the ovary, which was not removed. This may be a temporary disturbance. The diagnosis of pyometra may be verified or disproved by inserting a probe or better still, a No 4 or 5 Hegar dilator into the cervical canal beyond the internal os. If a purulent discharge escapes, the diagnosis of pyometra is confirmed. The treatment consists in the insertion of a stiff rubber tube to permit drainage of the uterine contents. Of course, this procedure must be carried out under aseptic precautions. If purulent material escapes from the uterine cavity, the drainage tube should be left in place a few days. No anesthetic is necessary for the insertion of the probe or cervical dilator, but the patient should be given a narcotic before the procedure is carried out.

POSSIBLE TOXICITY OF ROTENONE INSECT DUST

To the Editor—Please advise as to the toxicity danger in the use of Rotenone Insect Dust by Hammonds on vegetables beans cabbage and cucumbers.

H H RITTENHOUSE M D Bridgeville Pa

ANSWER—Rotenone itself is seldom used as an insecticide, but rather the powdered crude root of Cube or Derris (containing rotenone, deguelin, toxicarol and tephrosin as the principal active constituents). As judged from animal (and to some extent, human) experimentation there is no danger of acute poisoning as a result of ingestion of vegetables sprayed with rotenone, cube or derris. In this connection it has been estimated that allowing for a maximum spray deposit and assuming that man is no more resistant than the most susceptible of the laboratory animals, a person would have to eat about 4,000 apples sprayed with derris to obtain an acutely fatal dose. The problem of a possible chronic intoxication following the prolonged use of vegetables treated with derris or rotenone has been studied on animals and, while further work is desirable, results of these observations also lead one to believe that the human health hazard here is also low. Hammonds Rotenone Insect Dust is said to be a stabilized rotenone product.

References

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SHORT WAVE DIATHERMY IN ARTERIOSCLEROSIS

To the Editor—While I was giving a short wave treatment with induction coil on 25 meters—the coil in pancake fashion over the forehead—to an infected sinus in a man, aged 55 the patient within three minutes after the treatment was started suddenly had a severe convulsion with complete loss of consciousness. Following some heavy breathing the respiration stopped and the pulse could not be found. Before epinephrine could be administered respiration and heart action gradually returned and the patient after three quarters of an hour of unconsciousness slowly recovered. This was the patient's second treatment the first less tolerated without any difficulty. As the treatment had just begun the amount of heat created was moderate and the patient's statement after he had fully regained consciousness was that he felt slightly warm the last he could remember. The blood pressure was 200/120 a week prior to the treatment and 110/50 following the accident. With the exception of hypertension and a chronic sinus infection the patient's condition was normal. There was no history of similar attacks. What in your opinion happened and is this a common occurrence? Is hypertension or moderate arteriosclerosis a contraindication to treatment with the induction cable placed on the forehead?

M D, New York

ANSWER—Complaints of headache, nervous restlessness and slight fever by workers near the powerful short wave radio broadcasting tubes was the incentive for large scale research work in the therapeutic use of short wave radiation. During the past few years short wave diathermy to the sinuses and the brain by both condenser plates and by coil treatment has been extensively employed by investigators and clinicians. Search of the literature fails to disclose any reports of ill effect of such heat treatment. In animal experiments with the 15 meter wave applied to the brain (Horn, Kauders and Liebesny *Wien klin Wchnschr* 30 936 [July 27] 1934) necropsy showed a selective hyperemia of the meningeal blood vessels as compared with control animals. The same effect has been shown in necropsy of the brain of paralytic patients after a course of short wave treatments. In the case described the best explanation is a sudden heat effect causing a reactive spasm in presumably arteriosclerotic blood vessels. There appears to be no definite contraindication to short wave coil treatment to the sinuses in suspected arteriosclerosis of the cerebral vessels provided the patient is under constant observation and that the heating is increased gradually and is always kept within comfortable toleration.

POSSIBILITIES OF MENSTRUATION AND PREGNANCY AFTER IRRADIATION AND OVARIAN TUMOR

To the Editor—An unmarried woman aged 26 had marked menstrual discomfort since puberty and for two years previously had profuse bleeding at the menstrual period so that she was anemic and unable to do her work properly. In December 1932 600 roentgens was given over the right ovary and, as the profuse bleeding began again the following month 50.44 mg of radium was inserted into the uterus for sixteen hours in January 1933. This stopped the menstrual bleeding but she was told that it would not be permanent. Shortly after this a left ovarian tumor was diagnosed and removed and was found to be a dermoid cyst. At the same time a small wedge shaped section of the somewhat sclerotic right ovary was also resected. Owing to subsequent left kidney operations one for calculus and another within a few days because of stricture and ureteral obstruction from which she was not expected to recover because of the severe shock her health has been poor. Much of her difficulties were found to be due to a systolic pressure ranging between 65 and 90 mm of mercury. Appropriate treatment immediately raised this to 120 mm. she has gained 10 pounds (4.5 Kg) to a present weight of 116 pounds (53 Kg) and does not have the weak spells that had plagued her for six years. Has or has not this woman now 33 years old any chance of returning menses and of becoming pregnant? What plan of endocrine medication would be most likely to stimulate any remaining ovarian tissue? If she should become pregnant what are her chances of having a normal child? She is anxious to have children but will not marry with the present outlook.

M D, Pennsylvania

ANSWER—In spite of the lapse of four and a half years there is definitely a chance for the return of menstruation in this case. The reason for a fair degree of optimism is the patient's youth at the time the roentgen and radium treatments were given. In some instances much larger doses have been administered than this patient received and menstruation has returned after an interval of a number of years. On the other hand, in some young women a small amount of radiation therapy has resulted in a permanent amenorrhea. Unfortunately there is no way to foretell which young women will have a permanent absence of the menses and which ones will not.

It is possible for the patient to be ovulating even though she does not menstruate. A simple way to determine this is to remove small pieces of endometrium at weekly intervals with a tiny curet either with or without suction. This procedure may readily be performed in a physician's office without any anesthetic. If, on microscopic examination, repeated specimens show a stationary type of endometrium or atrophic tissue the patient is almost certainly not ovulating. If successive changes are found that reveal both proliferative and secretory endometrium, ovulation is probably taking place.

The only endocrine products that may stimulate ovarian function are those derived from the anterior pituitary gland or the gonadotropic substance derived from the urine of pregnancy. However, the results of such therapy have not been promising. If the patient should become pregnant and continue to full term, her chances for having normal children are just as good as those of women who have not received radiation therapy. There has been controversy on this subject but the consensus is that radiation therapy applied before fertilization of an ovum does no harm. On the other hand, when roentgen therapy or radium is applied after conception has taken place, distinct harm may result to the fetus.

ATTACKS OF EPIGASTRIC PAIN

To the Editor—A white woman aged 37 dates her illness from the birth of a child fifteen years ago. Three days after she had an attack of epigastric pain accompanied by nausea. There was no vomiting and no radiation of pain. Relief was obtained by morphine. This pain has persisted on and off for two years. Her appendix was removed with no effect. Roentgenograms of the gastro-intestinal tract were negative. One year later the gallbladder was removed and in six months the attacks recurred. The attacks could be relieved by morphine. There was hiccoughing and rarely vomiting. Between attacks she was perfectly well. Six years ago she was operated on for a right tubal pregnancy. Nine months ago she began to use a drug containing pantopon, papaverine and atropine derivative. Taken by mouth it does not give the help that she gets when it is dissolved in some water and instilled into the rectum. Two months ago a surgical exploration disclosed nothing except some adhesions which were broken. Three days later a typical attack occurred. Since then I have made numerous skin tests and had a gastro-intestinal series done. All were negative. Physical examination discloses some tenderness in the epigastrium. The blood pressure is 120 systolic 68 diastolic. The weight ranges from 137½ to 124 pounds (62.56 kg.) now. The Wassermann reaction is negative. Blood counts and urine examination give normal results. At present she gets two attacks a day, one of them waking her from sleep at night. She describes the pain as a muscle soreness. She has been loaded with antispasmodics and analgesics to no avail. She has been on low fat and elimination diets but the attacks occur just the same. Will you suggest a diagnosis or outline further studies and treatment?

M D New York

ANSWER—The pain is probably due to visceral spasm associated with some trouble in the sympathetic nervous system. A spinal Wassermann test should be done and, if this is negative, operation on the sympathetic ganglion might be considered.

RUSTED STEEL FROM SWEATING

To the Editor—With a local industry in which I am plant physician the following problem has arisen on which I should like your advice. Of a group of men who make a final inspection of equipment that must fit very closely some rust the finish in inspecting it. By fingerprinting them on similar steel surfaces I have found which ones are responsible for the rusting and this has been checked by their inspection output in the plant. In those men who rust the steel in their inspection I have found no physical abnormalities nor as far as I can ascertain are their habits different from those of their colleagues who do not rust equipment. Is there a difference in the secretions of the hands of different persons? Is this difference something that can be anticipated by suitable physical or laboratory examination prior to their employment? Can you suggest some way of correcting this rusting propensity of these otherwise good workmen?

M D Indiana

ANSWER—The chemical constituents of perspiration are not precisely the same for all persons, and the same person may demonstrate appreciable changes during different periods of the same day. Long continued profuse sweating produces a more alkaline sweat. Also as sweating is sustained, the output of sodium chloride and other mineral salts may be increased. The high output of sodium chloride is associated with metal rusting although this one chemical may not be the sole factor responsible. The use of rock salt on streets for antifreeze purposes has become a source of complaint in connection with the rusting of the steel of automobiles. In some plants it has proved desirable to make use of stainless steel in connection with mechanisms requiring close fittings and under other circumstances. It is not readily possible to determine, other than by trial and error, members of any work group who may contaminate metal by the products of perspiration. However, a number of avenues offer escape from this type of damage. In some instances rubber gloves may be worn to advantage. If this is not practical, a wide variety of chemicals may be utilized as sweat depressants. No one of these is entirely free from injury. Their use in industry merely substitutes minor physiologic damage for the damage that is done to steel parts through causing rust. Among other agents that may be used are aluminum chloride, aluminum acetotartrate, alum solution of formaldehyde, zinc oxide and titanium dioxide. Two typical formulas are: 1. Aluminum chloride 16 Gm. distilled water 100 cc., mix, filter and apply as a lotion. 2. Aluminum sulfate 32 Gm., potassium permanganate 6 Gm. water 100 cc., mix, dissolve and apply as a lotion.

MENSTRUAL PAIN AND CURE OF GONORRHEA

To the Editor—A young married woman complained of a moderate vaginal discharge and severe abdominal pain during her menstrual period. Examination showed that pus could be expressed from the para-urethral (Skene's) ducts and that there was a moderate degree of cervicitis. A blood test gave a negative Wassermann reaction but a positive 4 plus gonorrheal complement fixation. The assumption is that this patient has a chronic gonococcal infection of Skene's ducts and of the cervix. The husband gives a history of syphilis adequately treated prior to marriage but no history of gonorrhea. His blood is negative for both syphilis and gonorrhea. Would you kindly answer the following questions: 1. Does the infection account for the abdominal menstrual pain? 2. What is the most approved method of treatment especially of Skene's ducts? 3. How long will treatment be necessary to cure the condition? 4. What are the criteria for complete cure so that coitus may be indulged in without danger of infecting the partner?

M D New York

ANSWER—1. Pelvic pain associated with gonococcal infection may be present only at the time of menstrual congestion, but it is more characteristic of gonorrhea for the patient to have pain at other times also. Nothing is stated relative to palpable disease of the adnexa, if there is a pathologic condition sufficient to produce symptoms there is usually palpable thickening, or at least tenderness, in the region of the adnexa.

2. Skene's ducts, each 1 cm. in length and located in the floor of the urethra, are the rudimentary homologues of the prostate gland. They open on the floor of the urethra, just at or within the meatus. There are from two to four para-urethral glands near the urethral meatus. Real pus expressed from Skene's ducts is pathognomonic of gonococcal infection, but one must be careful not to confuse pus with innocent inspissated secretion, which may often be expressed from the duct orifices. Bristle-like thickening of the duct affords confirmatory evidence of gonorrheal disease. Many leading laboratories attach little importance to the gonorrheal complement fixation test. It is of uncertain value.

3. A woman who harbors the gonococcus tends gradually to rid herself of infection within a few months, provided she does not have a consort who is also infected, and provided further that she does not drink alcoholic beverages or indulge in sexual excesses. Traumatic local treatments during the active course of the disease tend to drive the gonococcus into the deeper tissues and prolong the infection.

4. There are no specific criteria for complete cure. Cessation of symptoms and absence of the gonococcus in smears and in cultures should be followed by a quiescent period of six months or a year, preferably the latter, before one can be assured of a cure. In all cases a search should be made for pockets of infection in Skene's ducts and in the cervix before the patient is discharged as cured.

TUBERCULOSIS OF HIP AND CONGENITAL DISLOCATION

To the Editor—I have a patient who probably had tuberculosis of the left hip in childhood. Be that as it may she has a pseudarthrosis of the left hip. The left lower limb is shorter but she bears her weight in walking pretty evenly on both sides. She does not favor one side. I take it that this makes the prognosis better. The left trochanter is somewhat atrophied and a little posterior to its usual position. With the pelvimeter that I have I find it difficult to measure the transverse diameter of the outlet. By internal examination I cannot make out any great deformity. The patient is eight months pregnant. The measurements are as follows: anterior superior spines 22 cm. crests 28 cm. trochanters 31 cm. right oblique 22 cm. left oblique 21 cm. superior conjugate 20 cm. anterior posterior of outlet (uncorrected) 12 cm. transverse of outlet 8 cm. posterior superior spine to opposite tuber ischia right 20 cm. left 17 cm. 1st lumbar to anterior superior iliac spine of same side right 21 cm. left 17 cm. posterior superior spine to opposite greater trochanter right 21 cm. left 25 cm. posterior superior spine to lower margin of symphysis of same side right 22 cm. left 21 cm. middle of back to posterior superior spine right 35 cm. left 5 cm. This case does not strike me as one of unilateral congenital dislocation. Please omit name.

M D Pennsylvania

ANSWER—The data supplied are insufficient to warrant any accurate diagnosis. The question of a dislocation of the hip should be verified by x-ray films. The limp presented by a patient with congenital dislocation of the hip results from the occurrence of the Trendelenburg sign when the weight is carried on the dislocated side, that is, the pelvis on the opposite side drops instead of having the normal elevation that should occur from the normal mechanism about the hip.

A tuberculous hip of long standing usually shows evidence of a destructive process which has involved the acetabulum, the head of the femur or both. There is evidence of cavitation of the involved areas and possible growth disturbances resulting from epiphyseal destruction. The motion in such a tuberculous hip is more apt to be restricted in all directions and at times may be painful. The prognosis for a normal delivery would seem most favorable. Undue strain on the involved hip should be reduced to a minimum and the possibility of a flare up of

a tuberculous condition must be kept in mind. In the event of this being a congenital dislocation, there should be no increase of symptoms unless the patient puts on considerable weight. A detailed x-ray study would seem most desirable.

BELCHING

To the Editor—A white man aged 37, complains of belching which is more severe at night for the past twelve years. It is so severe that his sleep is disturbed. He notices that certain foods increase the belching. There is no pain or tenderness present in the abdomen. The bowels are regular and the stools normal. He has a slight cough. No other symptoms are present. The family history is essentially negative. He has an executive position in a large concern demanding a great deal of responsibility. The patient is rather thin and somewhat undernourished. He weighs 122 pounds (55 kg.) and is 5 feet 7 inches in height. The scalp, eyes, ears and throat are normal. In the nose the turbinates are small and there is a wide gap between the turbinates and the septum, the result of a resection of the middle and inferior turbinates fifteen years ago. The neck and thyroid are not enlarged, there is no cervical adenopathy. The lungs and heart are normal. The blood pressure is 110 systolic, 75 diastolic. The abdomen, genitalia, rectum and extremities are normal. The skin is normal. The reflexes are equal and slightly hyperactive. The urine is normal. The hemoglobin is 75 per cent (Sahli). Red blood cells number 3,800,000, leukocytes 7,000 with the differential count normal. The Wassermann and Kahn reactions are negative. Gastric analysis is normal. X-ray and fluoroscopic examinations reveal a normal chest. Gastrointestinal x-ray examinations show only slightly increased peristalsis of the stomach and ptosis of the colon. Gallbladder studies give negative results. The diagnosis of aerophagia was made and explained to him. He was told to omit foods that disagreed with him and to eat slowly. Tincture of belladonna, a sedative and liquid petrolatum were given with no apparent relief. Any suggestions that you may give in relieving this condition will be greatly appreciated.

M D Ohio

ANSWER—Since the patient has a hemoglobin of 75 per cent (Sahli) and an erythrocyte count of 3,800,000, it is important that he be given iron. It is also important to remove gas-producing foods, such as members of the cabbage family and baked beans. Since the worst symptoms are at night, it is important that he sleep with a very thin pillow or preferably none at all. When he has a desire to belch he must hold his head up instead of leaning it forward, as he probably does now. Putting his head forward is a maneuver which makes him swallow more air. There is no gas produced in the stomach except in the presence of a high grade obstruction or when such substances as sodium bicarbonate are taken which combine with the hydrochloric acid to form carbon dioxide. He should always keep his head back when he has the desire to belch. Tell him to let what will come up by itself but that he must not try to get it up or keep it down.

ATTEMPTED STERILITY BY IMMUNIZING TO SPERMATOZOA

To the Editor—Some time ago I read an article on the production of temporary sterility in the female by injecting semen intramuscularly. Since the flood I have been unable to find the reference to this procedure. Kindly let me know the status of this procedure and give references to the original work.

M D, Ohio

ANSWER—Much experimental work has been done on animals to create a biologic immunity against spermatozoa. The injection into male rabbits either of their own semen or of a serum obtained from fowls into which rabbit semen has been repeatedly injected produces a marked depression of spermatogenesis. The subcutaneous injection of spermatozoa into female rats renders them temporarily sterile. In general, the immunity thus produced by spermatoxins is specific for the species but there are many exceptions to this rule, for the semen of the bull and the ram can immunize other animals, and the female rat may be sensitized by various sorts of semen.

Numerous workers have attempted to apply these results to the human female for purposes of contraception. In Russia it is the custom to use a preparation of human semen obtained from a condom specimen diluted with two parts of salt solution and to give from twelve to eighteen intramuscular injections in the buttocks twice a week, the amounts being gradually increased from 0.5 to 5 cc. No bad results have been observed. Baskin offers a simpler technic (*Am J Obst & Gynec* 24:892 [Dec] 1932).

The efficiency of the immunization is determined either by noting immobilization of spermatozoa in a hanging drop preparation or by a precipitation test. Ordinarily the result of one series of injections remains effective, both by laboratory evidence and according to clinical standards, from six months to a year.

One is forced to conclude that the value of this procedure as a contraceptive measure is still *sub judice*. The risks seem to be almost negligible, but the efficacy of the method cannot yet be fully evaluated.

HORMONE TREATMENT OF INFANTILE UTERUS

To the Editor—What product can I use to stimulate uterine growth? The patient in question has been diagnosed by injection of iodized oil as having an infantile uterus. Will she ever be able to conceive? She is 30 years old and has oligomenorrhea but no other trouble with her other bodily functions. The basal metabolic rate is minus 10. Please mention dosage and length of administration.

M D Cambridge Mass

ANSWER—Estrogenic products, such as theelin, theelol, amniotin, progynon-B, and progynon-DH and emmenon, are fairly satisfactory substitutes for ovarian activity, but they do not stimulate the ovary. Clinical use for troubles other than menopause symptoms and vaginitis in children is of doubtful value.

The pituitary gland of the living subject stimulates the ovary to activity, but clinically satisfactory gonadotropic products from the pituitary are not available for therapeutic use. Gonadotropic substance from the urine of pregnant women or from the placenta also stimulates the ovary, but it is doubtful that it would be of any significant use in this case.

OIL IN WATER

To the Editor—The water supply of this community is obtained from two wells about 250 feet deep. Bacterial examination shows no contamination. The water is fairly soft and of good quality. There is some oil in the water which varies from time to time from a very thin film to small droplets. This oil probably comes from several sources from the pumps in which case it would be plain lubricating oil from pipes and fittings used in the oil business in which case it might be crude oil or from the water strata owing to the practice of some oil companies throughout the oil field of forcing the water to the surface with natural gas under high pressure. I doubt that the latter is responsible for much of the oil in the water. What effect if any will this oil have on the human system? Would it cause rather severe cases of diarrhea?

L T Cox, M D Kermit Texas

ANSWER—Several areas in Texas possess drinking water supplies contaminated with oil. At the least, such water produces psychologic injury in the causation of nausea, in the curtailment of proper quantities of water intake and in general apprehension. Tourists through this section of the country on occasions report disturbing diarrheas, which are sometimes said to disappear on changing to bottled water for drinking purposes.

ALCOHOL INJECTIONS FOR PAIN

To the Editor—I should like information and references concerning the use of alcohol in the injection of the posterior sensory roots and the peripheral sensory nerves to relieve constant pain. I am particularly interested in the percentage of alcohol recommended for injection, the possible duration of the anesthesia and the untoward effects that might be expected.

C S FRANKLE M D St Petersburg Fla

ANSWER—Ninety-five per cent absolute alcohol is used ordinarily in injecting posterior sensory roots and for injection directly into peripheral sensory nerves. The relief of pain sometimes lasts as long as a year and a half. More frequently it is less than that, and often only nine months. The most common untoward result is painful neuritis, which may persist for weeks. If the alcohol is injected too superficially, slough may result or a sterile abscess may develop. Trauma from the needle striking a nerve trunk, or from pushing a nerve trunk against bone and injuring it, may be erroneously attributed to the alcohol. When a needle has been inserted at the wrong angle for paravertebral injection of a sensory root, the needle may be inserted through the intervertebral foramen and puncture the dura of the spinal cord. Too much alcohol injected into the spinal fluid may have a fatal result. Subdural injection of alcohol for relief of pain usually is carried out with from 0.5 to 1 cc of absolute alcohol. The complication to be avoided in this injection is paralysis.

CONGO RED IN TUMORS AND ROENTGENOLOGY

To the Editor—I am anxious to learn the details of the treatment of cancer with congo red. Can you outline the course of treatment? Where can I find the name and address of the doctors studying the drug?

F A NICOLETTI M D Pueblo Colo

ANSWER—The use of congo red was reported by Drs Isidore Arons and Boris Sokoloff at the fifth International Congress of Radiology, held in Chicago in September. It was not recommended for the treatment of cancer but for roentgen sickness which occurs after patients have been treated with x-rays whether they have cancers or benign tumors. In animals with freshly inoculated tumors some inhibiting effect was noticed on the tumor, but not after the growth had been well established. This is probably not due to any direct effect on

the tumor but to an impairment of the health of the animal for the injection of many substances of a toxic nature will slow down the growth of freshly inoculated tumors temporarily. No such effect was observed after the tumor was thoroughly established in the animal's body. Arons and Sokoloff combined congo red with liver extract and found that tumors also were inhibited but that the effect was only temporary. Some of the newspaper reports were slightly in error, for there was no reference in the original article to the use of congo red in the treatment of cancer.

POSTOPERATIVE MEDICATION FOLLOWING CURE OF MORPHINE ADDICTION

To the Editor—A morphine addict has been thoroughly cured for about a year. She is to have an operation July 1. After the operation morphine will have to be given to relieve the postoperative pain. Do you believe that she will become an addict again? M D Ohio

ANSWER—There is little danger of using morphine in this case, provided its administration is properly controlled. The question may be raised whether the postoperative use of morphine is mandatory in this or any other case, as there are many excellent surgeons who do not employ it for this purpose and whose patients seem to get along satisfactorily with the use, if required, of some analgesics such as acetylsalicylic acid, aminopyrine, phenobarbital and codeine, either alone or in combination. If the patient cannot retain analgesic medication, the administration of the following suppository might be advisable:

R Soluble phenobarbital	10 Gm
Aminopyrine	30 Gm
Oil of theobroma	200 Cm

Divide into ten suppositories One every four hours as required

RESPONSE OF PARALYZED PUPIL TO PILOCARPINE

To the Editor—Will a paralyzed pupil contract in response to pilocarpine? M D South Carolina

ANSWER—A pupil paralyzed by injury to the nerves of the iris will usually contract on administration of pilocarpine. The contraction lasts but a relatively short time however, and is followed by a return of the mydriasis. A pupil paralyzed by rupture of the sphincter, which can sometimes be seen only with the slit lamp, will contract but partially or not at all with pilocarpine.

POSITIVE WASSERMANN TEST IN UNRESOLVED PNEUMONIA

To the Editor—In Queries and Minor Notes in THE JOURNAL October 16 page 1300 Dr J F Loeble refers to unresolved pneumonia (x-ray diagnosis) with positive syphilitic serologic reaction. The answer given in THE JOURNAL is not quite in keeping with the facts. For some years in my ward at the Philadelphia General Hospital where the service is very large and the incidence of syphilis above the average we have frequently encountered unresolved pneumonia in syphilitic patients. My son Dr Harold F Robertson and I reported a series of cases in *Inter-national Clinics* 3 23 (Sept.) 1932. At the recent meeting of the Pennsylvania State Medical Society held in Philadelphia Dr Harold F Robertson presented a similar series before the Section on Medicine which I had the privilege of discussing at some length. This will be published in the *Pennsylvania Medical Journal*. From opportunities given to study such cases post mortem we are of the opinion that damage to the lung precedes the development of pneumonia. This is revealed by perivascular infiltrations and fibrosis of various grades necessarily dependent on the time factor of the underlying disease. We are convinced that a frank pneumonia in the absence of syphilis cannot produce a positive Wassermann or Kahn reaction. Syphilis is so all embracing in its assaults on human tissue that no legitimate reason exists which justifies exclusion of the lungs when syphilis has been present. Irrespective of its attack on nervous, bony or other structures there is always more or less cardiovascular involvement and when it is of long standing the aorta is increased in diameter to a greater extent than that seen in the hypertensive without syphilis. This of course we utilize only as a factor in determining in a relative way the duration of the syphilitic infection. In our experience syphilis existent for any length of time is definitely capable of inducing delayed resolution in lobar pneumonia. We also encounter cases of another type in which an apparent syphilitic pneumonia exists when blood cultures and all attempts at typing are negative and the physical signs are those of a lobar pneumonia though the patient is not toxic or cyanotic. One lobe or the entire lung may be involved and under antisyphilitic treatment the apical portions clear up more promptly than the base and the base may remain permanently damaged fibrotic and more or less thickening of the pleura eventuating. The third type is the gummatous lesion which is usually diagnosed as tumor by x-ray examination and which always terminates with carrying and pleural involvement. One such gumma was located in the apex of the right lung as to give rise to the diagnosis of a suppurative tumor although Horner's syndrome was absent. When resolution occurs it is very gradual and the lower lobe not seldom remains permanently damaged.

WILLIAM ECKERT ROBERTSON M D Philadelphia

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Examinations of the National Board of Medical Examiners and Special Boards were published in THE JOURNAL November 20 page 1748

Missouri June Examination

Dr Harry F Parker state health commissioner, reports the written examination held at St Louis June 3 5 1937. The examination covered 14 subjects. An average of 75 per cent was required to pass. One hundred and fifty six candidates were examined 144 of whom passed and 12 failed. The following schools were represented:

School	PASSED	Year	Per Cent
Howard University College of Medicine	(1935) 80 9	(1936)	83 4
Northwestern University Medical School	(1937)		83 5
School of Medicine of the Division of the Biological Sciences	(1937)		83 5

University of Louisville School of Medicine	(1937)	85 7
Tulane University of Louisiana School of Medicine	(1935)	87 2
University of Michigan Medical School	(1932)	88 7
University of Minnesota Medical School	(1937)	84 4
St. Louis University School of Medicine	(1927)	82 4
(1935) 83 1 (1937) 77 6, 77 7 78 2 78 8, 79, 79 7		
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* This applicant has received the M.B. degree and will receive the		
M.D. degree on completion of internship		
† Verification of graduation in process		

Book Notices

The Endocrines in Obstetrics and Gynecology By Raphael Kurzrok
Ph.D. M.D. Associate in Obstetrics and Gynecology the College of
Physicians and Surgeons Columbia University Cloth Price \$7.50
Pp 488 with 178 illustrations Baltimore Williams & Wilkins Com-
pany 1937

This book, by a well known investigator who has contributed original and valuable studies to clinical endocrinology, is divided into two parts of unequal merit. Approximately half is devoted to the physiology and chemistry of endocrine substances and the remainder to clinical applications and special clinical phenomena. The former shows unmistakable evidences of haste and carelessness in compilation of data, writing and proof-reading, the latter is much more adequately written and reflects a mature and critical analysis of clinical problems.

Only a few deficiencies need be selected for detailed consideration. The author uses several systems of nomenclature for a single group of substances and different spellings of the same terms interchangeably. Occasionally some designations are used incorrectly. Estrin, estrone and folliculin are used synonymously. Estrone, a specific crystalline compound, ketohydroxy estratriene, is repeatedly used in the text as a generic term for estrogens in general. "Oestrogenic" and "estrogenic" appear in successive sentences. "Estrin" often becomes "oestrin". The reader is told that estrone is "found in the ovaries, blood and excreta of all vertebrates," in "protozoa, coelenterates, worms, anthropodes [arthropods?], seeds, potatoes, female willow catkins, lignite, petroleum." Actually estrone (theelin) has been isolated and identified only in the urine of pregnant women and in that of mares and stallions. Estrogenic substances are widely distributed in nature, but these have not all been identified as estrone. In fact it is doubtful whether some of them are even closely related to estrone.

The author states "It is well known in chemotherapy that an alcohol is more active than a ketone," a thesis of dubious general validity. Even the example cited, the greater estrogenic activity of estradiol as compared with estrone, is of only limited significance as this greater potency holds only for certain species such as the rat. The name suggested by Hisaw for the progestational principle of the corpus luteum is stated to be "relaxin". The latter is a term proposed by the aforementioned worker for another substance in the corpus luteum that relaxes the pelvic ligaments in certain species of animals (as indeed the author himself recognizes in a subsequent section). Hisaw coined the name "corporin" for the progestational factor.

Typographic errors abound. The most common appears to be the interchangeable use of an amusingly large triangle and the Greek letter Δ (used in chemistry to represent double bonds) in the formulas for the steroids. In addition, author and typog-

rapher were apparently unable to decide whether the number, indicating the locations of the double bonds should be superior or inferior or in large type on the line.

In the section on the corpus luteum one finds no mention of the work of Leo Loeb. In that on the isolation of epinephrine, the name of John J. Abel does not occur. The investigations of Hanson on the parathyroid are similarly omitted.

It is disconcerting to find a statement that "the gonadotropic hormones are found only in the adenohypophysis, and in no other gland of internal secretion," and in a subsequent section a contradictory admission of the well known fact that the placenta (also an organ of internal secretion) is rich in gonadotropic substance.

Despite such errors as these, which it is hoped the author will correct in subsequent editions, the part of the book devoted to clinical problems (such as physiologic reactions of the human uterus, the alleged safety of the "safe period," menstrual disturbances and sterility) should be useful to those who treat gynecologic disturbances. The text contains numerous illustrations, excellently reproduced.

L'anaphylaxie Expérimentale et humaine Par Pasteur Vallery Radot
G. Mauric et Mme Holtzer (ex-Hugo) Paper Price 36 francs Pp
130 with 25 illustrations Paris Masson & Cie 1937

This short monograph is a summary of the work on anaphylaxis by Pasteur Vallery-Radot and his associates since 1929. The five pages of references are exclusively of the latter author. The work, of an experimental and clinical nature, embodies some of the well known facts in anaphylaxis and allergy. Briefly stated, anaphylaxis in animals (rabbits used) is always induced and is characterized by clinical shock, prolonged fall in blood pressure, vasoconstriction (peripheral and mesenteric vessels) and a decreased coagulability of the blood. In man, induced anaphylaxis is rare (as after therapeutic administration of horse serum). However, the author classifies the various allergic manifestations in man as spontaneous anaphylaxis, notwithstanding the fact that the criteria given for anaphylaxis in animals are never seen in the allergic states of man. He recommends intradermal skin tests or the Prausnitz-Kustner reaction in the diagnosis of allergic states and has found clinically that daily intradermal injections of cutaneous test doses over periods of months is of greater value in desensitization than weekly or biweekly intradermal or subcutaneous injections. He does not believe that a true desensitization is ever accomplished in man. The monograph will appeal more to those interested in the experimental phase of allergy than to those engaged in its clinical application.

Emanotherapy By F. Howard Humphris M.D. F.R.C.P. D.M.R.F.
Honorary Consulting Radiologist to and Member of the Medical Advisory
Board of St. John Clinic and Institute of Physical Medicine London
and Leonard Williams M.D. Cloth Price \$3 Pp 188 with 6 illus-
trations Baltimore William Wood & Company 1937

The term emanotherapy is used here to include the treatment of widely differing pathologic conditions, except malignant conditions, with small amounts of radon in such forms as drinking water, baths and muds. This form of treatment is here referred to as emanotherapy in order to differentiate it from treatment in which radium salt is used. The author definitely emphasizes the fact that he refers only to treatment with radium emanation and never to treatment with radium salts. Furthermore, nothing in this book concerns itself with the application of radon in concentrated form, as it is used for local treatment of malignant diseases. Therefore, all objections which arise from the knowledge of the danger of repeated administration of radioactive salts are at once eliminated. The scope of the book is limited to the use of small amounts of radon in the different types of treatment already mentioned.

Since radon has a short life span, all preparations of this type deteriorate with relative rapidity. The gas is eliminated quickly, particularly through the lungs. The blood has only a certain power of absorption of this gas and the excess is also rapidly eliminated here. The danger of accumulation, therefore, which is always present in treatment with radium salts, is absent in all types of treatment with radon.

After an introductory chapter giving the history of emanotherapy, the scientific literature on the effect of such treatment

is surveyed. In two chapters on technical considerations the different procedures for the administration of this treatment are discussed: treatment by inhalation, by ingestion of radioactive water, by cutaneous application with pads and compresses as well as with creams and pomades and radioactive baths and muds; subcutaneous injection, insufflation into the rectum and the vaginal douche.

In the following chapter the clinical indications for the various clinical specialties are considered: gout and rheumatism, gynecology, otorhinology and dermatology. In a special chapter the treatment with muds is discussed, particularly from the point of view of whether the radiating energy is the most effective factor in this type of treatment. The authors answer this question in the affirmative. Some less common indications for the use of emanotherapy are discussed extensively in a separate chapter.

The book has been written with the purpose of spreading the knowledge of the clinical application of emanotherapy in Great Britain, where, in contradistinction to many countries and particularly those on the European continent, this treatment is not very popular. From this point of view the book is a convenient guide. However, one might wish for a more critical survey of the subject. It should be remembered that certain of the natural spas known for their curative effects in certain pathologic conditions have an emanation content below the threshold of physiologic efficiency. Yet it has been the experience of some of the most prominent clinicians that the use of these waters is considerably more effective than treatment with artificial radioactive substances or solutions, even though these artificial agents may contain a much higher amount of radioactive material. Therefore, while the radioactivity may have a certain part in the action of these therapeutic agents, there are certainly many other effects encountered in these results which may be explained by other factors, such as temperature. When one considers the beneficial effects of mud compresses, which contain only infinitesimal amounts of radioactivity, there is a great question as to whether such beneficial effects are due to the radioactive materials or to some other factor.

This book fills a definite gap in that it gives a convenient source of information covering the whole field dealing with this type of treatment, with competent explanations of the physical and biologic problems involved.

A bibliography is appended to each chapter.

The Control of Tuberculosis in England Past and Present. By G. Gregory Kayne, M.D., M.R.C.P., D.P.H., Deputy Medical Superintendent, County Sanatorium, Clare Hall, Middlesex. With foreword by Sir Humphry Rolleston, Bart. G.C.V.O., K.C.B. Cloth. Price \$3. Pp. 188. New York & London: Oxford University Press, 1937.

This book deals with the whole problem of tuberculosis control in England. The first part includes treatment and prevention before 1908. While the cause of the disease was known, this was before the present method of administering the tuberculin test intracutaneously was employed. Moreover, artificial pneumothorax was not used in England at that time. The hospital and sanatorium situation prior to 1908 is presented in considerable detail, as well as the high mortality from the disease. In the second part such subjects as reporting of cases of tuberculosis and various acts, such as the National Insurance Act and the Local Government Act are presented. One chapter is devoted to control of tuberculosis before the Great War, another to control during the war, and a third to progress in control since the Great War. Part III contains an excellent discussion of the present day tuberculosis problem in England. Tables are presented showing the decrease in mortality. The author presents a most modern point of view with reference to control of tuberculosis among children by emphasizing the importance of protecting them against communicable cases of the disease. He calls attention to the fact that the bovine type of tubercle bacillus as a cause of pulmonary tuberculosis is not so rare as was formerly believed, in fact, in children he estimates that 25 per cent of the deaths from all forms of tuberculosis can be attributed to the bovine type of tubercle bacillus. Such facts should cause every physician in the United States to appreciate more than ever before the value of the work of veterinarians in controlling tuberculosis among cattle. The author believes that every attempt should be made to prevent

tubercle bacilli of both human and bovine types from entering the bodies of children as long as possible. He calls attention to the fact that many persons now reach adult life without tuberculous infection and that every effort should be put forth to protect adults against exposure. The importance of the intracutaneous tuberculin test is emphasized for both children and adults. He thoroughly appreciates the value of the x-ray film in locating areas of disease and determining more accurately their extent than can be done by any other method. With reference to the detection of activity of the tuberculous lesion, he says "Radiology has not reached the stage at which the degree of activity of the lesion may be judged with any degree of accuracy, but it has demonstrated the existence of latent lesions which may recrudescence."

In the section on treatment, collapse therapy is given an important place. Although there exists in England a difference of opinion as to whether artificial pneumothorax should be instituted in the absence of pulmonary cavities, the author states that, since artificial pneumothorax may lead to considerable shortening of institutional treatment, enables patients to carry on with their work while under treatment and is the most rapid method of rendering a patient noncontagious, he definitely appears to favor its adoption even in the noncavernous cases in the working classes. In the prevention of tuberculosis, the chief emphasis is placed on finding, treating or isolating persons with tuberculosis in communicable form. Considerable emphasis is placed on open-air schools, preventoria and special buildings on sanatorium grounds for infected children. This is contrary to the present trend in the United States, where such institutions for children who do not have clinical disease are being abolished. It is gratifying to see emphasis placed on the role of the general practitioner in the tuberculosis control program. This book contains much valuable information and should be available to all physicians engaged in any phase of tuberculosis work.

Modern Psychology in Practice. By W. Lindesay Neustatter, B.Sc., M.B., B.S., Clinical Research Assistant to the Dept. of Psychological Medicine, Guy's Hospital. With a foreword by R. D. Gillespie, M.D., F.R.C.P., D.P.M., Physician in Psychological Medicine, Guy's Hospital. Cloth. Price \$3.75. Pp. 299. Philadelphia: P. Blakiston's Son & Co., Inc., 1937.

This book, by a London psychiatrist, is an introduction to the psychology of the commoner mental disorders. A brief introduction to general psychopathology is followed by an even briefer rapid review of the chief concepts used by the several "schools of thought," such as the Freudian and the Adlerian. Children's disorders are presented from a pediatric rather than a psychiatric point of view. Here a wide field is sketchily outlined, the discussion including problems of anxiety in children, behavior problems, speech disorder, mental defect and methods of treatment. The commoner neurotic disorders and psychoses among adults are discussed. A section on methods of treatment gives the author's personal experience in treatment approaches, based primarily on psychoanalysis. A concluding general section on psychology and general medicine discusses psychologic aspects of asthma, rheumatism, cardiac disturbances and other common conditions. Causation and prophylaxis curiously are treated at the end of the book. The volume should be useful to physicians and medical students who wish to acquaint themselves with current thinking in the field of medical psychology and psychotherapeutics. The author, a physician at Guy's hospital, was formerly a Commonwealth fellow in child psychiatry and is well oriented in his field. The book is written frankly as representing the author's own reaction to current teaching and reflects his own clinical experience. Necessarily much of the discussion is too fragmentary and sketchy to be of great use to the physician who wishes to prepare himself for actual clinical work with mentally disturbed patients, but the book should be of great value to the general practitioner in aiding him to a helpful approach to such patients in the course of general practice. The author's special emphases in treatment approaches appear to be unduly colored by stekelian influence. Specialists in the various schools of psychotherapeutics will differ with the author in many details but will recognize the validity and general soundness of his treatment approaches. The book is much more readable, much more understandable and much more authentic than most books on medical psychology written for

laymen and medical students. A felicitous style, clear language and a ready wit, rare in medical writings, enliven the book and give one the impression that, whatever the merits or deficiencies of the author's particular views, doubtless he is an excellent psychotherapist and is willing to tell how he does it and what he thinks about his work. Medical students should read this book.

Das Serum Eisen und die Eisenmangelkrankheit (Pathogenese, Symptomatologie und Therapie) Von Ludwig Hellmeyer, Oberarzt der Medizin. Uniklinik Jena und Kurt Plotner, Assistenzarzt der Klinik. Paper. Price 6 marks. Pp. 92 with 22 illustrations. Jena: Gustav Fischer, 1937.

The determination of serum iron has always presented technical difficulties which have been an obstacle to the thorough study of the iron deficiency state. This monograph concerns itself with not only the pathogenesis, symptomatology and treatment of conditions associated with iron deficiencies but also with methods for iron determination. The authors give a detailed description of their method in the first part of their monograph. The values for a small group of normal men and women are given and no direct relationship was found between the hemoglobin content of their blood and serum iron. Following the discussion on technique are clinical observations on acute and chronic posthemorrhagic anemias, primary hypochromic anemia, hemolytic anemia, leukemia, polycythemia vera and postinfectious anemias. The serum iron in tuberculosis and rheumatic fever is next discussed. The authors then discuss the metabolism of iron in normal and pathologic states. Treatment of the iron deficiency states conclude the monograph. The text is frequently illustrated by graphs and charts but the bibliography is glaringly deficient in pertinent references. While the material presented by the authors is a contribution to the work in this field, it is by no means of monographic scope. Furthermore, the author's clinical observations are inadequately controlled.

Physical Aspects of Radium and Radon Therapy By Dr. C. E. Eddy, F. Inst. P., Physicist in charge and Mr. T. H. Oddle, M.Sc., A. Inst. P., Physicist of the Commonwealth X-Ray and Radium Laboratory, University of Melbourne, Commonwealth of Australia. Department of Health. Paper. Pp. 60 with 14 illustrations. Canberra: F. C. T. [n. d.]

This useful pamphlet has been prepared by several Australian physicists and is distributed by the government to those working with radium. It contains a clear summary of the most important phases of our knowledge of the physics of radium, of the methods of placing radium and radon in the containers, size and construction of these containers, tables of the decay of radon, a discussion of the advantages and disadvantages of radon as compared to radium, and of the conditions governing the issuance of government radium to hospitals, approved medical practitioners and research workers. The Australian Department of Health owns 10 Gm. of radium and the report suggests that where radium is to be distributed it is best used in the form of radon. No instructions are given for the clinical application of these two forms of radiation.

Chronic Miliary Tuberculosis By Clifford Hoyle, M.D., M.R.C.P., Assistant Physician to the Hospital for Consumption and Diseases of the Chest, Brompton, and Michael Valzey, M.B., M.R.C.P., Medical First Assistant and Registrar, London Hospital. Cloth. Price \$4.25. Pp. 140 with 18 illustrations. New York & London: Oxford University Press, 1937.

In this book the authors present 110 cases of chronic miliary tuberculosis selected from the literature and ten additional cases which they are reporting for the first time. All 120 patients lived three months or more after the disease was recognized. Attention is called to Waller's statement in 1845 to the effect that persons suffering from miliary tuberculosis might recover and also to examples which Wunderlich presented in 1860. Since that time numerous cases have been reported but in many the evidence was not found to be sufficient to justify their inclusion in this monograph. The authors present their personal series of ten cases in considerable detail with reference to clinical manifestations, x-ray and laboratory observations and morbid anatomy. Under treatment they state that the disease may heal completely and the patient may remain well. They believe that formerly such patients were given prolonged and unnecessary hospital or sanatorium treatment on the basis of persistent shadows on the x-ray film. They describe another

group of cases in which the disease advances steadily and is not unlike acute miliary tuberculosis except that the patients live a little longer. For this group treatment is of no avail except that which brings about relief from symptoms. For the intermediate group they recommend rest and suggest partial bilateral artificial pneumothorax, although this has not been attempted. However, in one case in which the miliary tuberculosis was unilateral they did institute artificial pneumothorax. Two patients who were treated with sanocrysin recovered, while three others did not respond, three patients treated with tuberculin showed no improvement. Various other methods of treatment, such as heliotherapy and splenectomy, are discussed. This monograph contains a good presentation of the subject, with a list of 217 references, seven tables, and eighteen illustrations made from x-ray films of the chest and pathologic specimens.

A Text Book of Medical Bacteriology By R. W. Fairbrother, D.Sc., M.D., M.R.C.P., Lecturer in Bacteriology, University of Manchester. Cloth. Price \$4.50. Pp. 437 with 17 illustrations. St. Louis: C. V. Mosby Company, 1937.

The author states that this book is an outline of the medical aspects of bacteriology. With this aim it of necessity straddles the two fields and is unable therefore to do complete justice to either bacteriology or medicine. As an example of its partial inadequacy from a bacteriologic standpoint is the omission of any description of the Barber single cell method of isolating bacteria in the discussion of pure cultures. Certain advantages, however, are evident. Chemotherapy with sulfamidamide for streptococcal infections is mentioned briefly but is already out of date. With the admirable brevity often characterizing the English textbooks, the author has been able to discuss general bacteriology from the standpoints of biology, infection, immunity and so on, systematic bacteriology including the more important bacterial diseases, filtrable virus, bacteriophage and the bacteriology of water, milk and shellfish. Finally there are three chapters on technique which might well be placed perhaps in a laboratory manual rather than in a textbook of this sort. In an attempt to simplify the reading matter, the author has not cited specific references in the body of his material, the end of the chapters, or the general index. This is an omission which will make the book practically useless as a starting point for more detailed investigation of various subjects. Furthermore the index is brief and could well be expanded in future editions.

Manual of the Diseases of the Eye for Students and General Practitioners By Charles H. May, M.D., Consulting Ophthalmologist to Bellevue Mt. Sinai and French Hospitals, New York. Fifteenth edition, revised with the assistance of Charles A. Perera, M.D., Instructor in Ophthalmology, College of Physicians and Surgeons, Medical Department of Columbia University, New York. Cloth. Price \$4. Pp. 498 with 376 illustrations. Baltimore: William Wood & Company, 1937.

The standard nature of this textbook is readily apparent from the fact that this is the fifteenth edition since 1900 and that there are British, Spanish, French, Italian, Dutch, German, Japanese and Chinese editions as well. The last previous American edition appeared in August 1934 and was reprinted in August 1936. The author states in the preface that the chapters on the ophthalmoscope and the ocular manifestations of general diseases have been rewritten and that much new information has been included on the subjects of operations on the lids and the retina. Obsolete matter has been deleted, with the highly desirable result that in spite of the advances in knowledge in this field there has been little increase in the size of the book. This edition remains an excellent introductory textbook for medical students and a source of convenient reference for the physicians who are not specializing in diseases of the eyes.

Chemie der Inkrete und ihre wichtigsten Darstellungsmethoden Von Dr. Kurt Maurer, a. o. Professor für Chemie an der Univ. Jena. Band I: Zwinglose Abhandlungen aus dem Gebiete der Innere Sekretion. Herausgegeben von Professor Dr. W. Berblinger. Paper. Price 7.00 marks. Pp. 67. Leipzig: Johann Ambrosius Barth, 1937.

This is a brief dissertation on the chemistry of estrogens and androgens, progesterone and related steroids, insulin, epinephrine, adrenal cortical principles, thyroxine, hypophyseal and parathyroid principles and the so-called circulatory hormone occurring in the pancreas and the urine. Those who desire a bird's eye view of the subject will find this treatise useful.

Report of the Advisory Council Science Museum Board of Education
for the Year 1936 Paper Price 1s 3d Pp 51 with 6 Illustrations
London His Majesty's Stationery Office 1937

The Science Museum of London does not include medicine or the medical sciences as a unit. Since many physicians are interested in the basic sciences, however, there is much of interest to him in the museum. Among the new exhibits listed for 1936 might be mentioned those on smoke abatement and sewage disposal.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Pharmacists Liability for Injuries Attributed to Preparation Sold as a Wart Remover—The plaintiff sued the defendant drug company, attributing certain injuries he sustained to the use of a preparation sold him by an employee of the company as a wart remover. The trial court gave judgment against the plaintiff and he appealed to the court of appeals of Georgia, division 1.

The preparation purchased by the plaintiff was in a bottle and the directions pasted thereon advised the purchaser to apply the lotion to the affected parts four times a day. The plaintiff alleged that he carried out these directions and applied the preparation to his wart four times daily for about ten days, that soon after he began using it the wart turned black, and his hand began to swell and became inflamed and infected, causing him great physical pain and mental anguish. Finally, it was alleged, a skin cancer developed. These results, it was contended, were caused "proximately and solely by the said preparation sold to him by the said defendant," being due to some harmful and dangerous ingredient contained in the preparation. When the case came to trial, however, the plaintiff failed to prove that the preparation sold to him contained a harmful and dangerous ingredient. The trial court, therefore, properly granted a nonsuit and the court of appeals. If the allegations that the preparation contained a harmful and dangerous ingredient were true, that fact could have been sustained by proof of a chemical analysis of it. In the absence of any such proof, the plaintiff failed to substantiate his allegations. The judgment for the defendant was affirmed.—*Brewer v Knight Drug Co, Inc (Ga)*, 190 S E 365.

Workmen's Compensation Acts Cerebral Hemorrhage and Ensuing Paralysis Attributed to Excitement—The claimant, a Negro 50 years old, but a man while driving a truck in the course of his employment. He became highly nervous and excited slumped over the steering wheel and was taken from the truck to a hospital, paralyzed in his right side. For the ensuing disability, he sought compensation under the workmen's compensation act of Maryland. The industrial commission denied him compensation, the Baltimore city court reversed the commission's finding and the employer appealed to the Court of Appeals of Maryland.

The physical condition of the claimant before the accident was not good. According to the testimony of expert witnesses who testified for him he had an excessive blood pressure and a premature hardening of the arteries. If he had suffered a paralysis while napping or while uneventfully driving his truck in the course of his employment the paralysis occurring would have been a natural and probable result of his impaired physical health and would have possessed none of the essentials of an accidental happening. The disease, or malady, however, did not run its natural and anticipated course. The claimant was precipitated into paralysis as the result of an accident. The sudden and unexpected action of a man riding a truck ahead of the claimant made it necessary for the claimant quickly to turn his truck in an effort to avoid striking him. Between the beginning of his excitement when the man jumped into the way of his truck and the shock of the truck's collision with the man's body the paralysis happened. So far as the claimant is concerned the court said all the elements of unin-

tention, unexpectedness, and happening by chance, concur in making the occurrence an accident. In the opinion of the court, there was no fundamental difference in law or in principle between an injury causatively resulting from a blood vessel being cut or crushed and one ruptured by an artificial distention of that blood vessel from fright, apprehension or exertion directly and proximately a consequence of an accidental event.

If an employee, while at work, suffers or is made ill from natural causes, the condition is not accidental since it is a natural result or consequence which is normal and to be expected. If, however, there is a subsisting illness or disability which is caused or accelerated by some act or event coming by chance or happening fortuitously, then the resulting condition is considered as having been caused by an accident. It is not necessary for the accidental quality or condition to be given or created by a wound or by external violence.

The court concluded, therefore, that the claimant had suffered an accidental injury arising out of and in the course of his employment. The judgment of the lower court in effect awarding compensation to the claimant was affirmed.—*Geipe Inc v Collett (Md)* 190 A 836.

Workmen's Compensation Acts Implied Consent of Employer to Physician Selected by Employee—The Oklahoma workmen's compensation act requires an employer to provide promptly for an injured employee such medical and other treatment and care as may be necessary during sixty days after the injury or for a longer period if necessary in the judgment of the commission. If the employer fails or neglects to provide such treatment within a reasonable time after knowledge of the injury, the injured employee, during the period of such neglect, or failure, may procure the necessary treatment at the expense of the employer.

Under this statute, said the Supreme Court of Oklahoma in *Oklahoma Utilities Co v Johnson*, 66 P (2d) 10, it is not necessary, in order to render an employer liable therefor, for the employee to request the employer to furnish medical aid, if the employer has notice of the injury and the necessity for medical attention. If the employer has knowledge of the fact that the employee has retained his own physician and responsible officials of the employer visit the employee without making any objection to the physician selected or suggesting some other one, the employer will be deemed to have impliedly consented to the arrangements made for the necessary medical attention.

A somewhat similar holding was reached by the Supreme Court of Oklahoma in *United States Casualty Company v Steiger* 66 P (2d) 55. There the court said that an employer should be given an opportunity after having knowledge of the injury to furnish the medical attention and select his own physician and where he has done so the employee should accept such service. But if the employer knows that an employee has selected his own physician and does nothing toward providing a physician of his own choice or indicating a dissatisfaction in the choice of the employee, he will be deemed to have consented to such selection as though the physician were selected by the employer.—*Oklahoma Utilities Co v Johnson (Okla)* 66 P (2d) 10 *United States Casualty Co v Steiger (Okla)* 66 P (2d) 55.

Health Insurance "Totally Disabled" Defined, Admissibility of Medical Expert Testimony—Forrester and Ranev as members of the Brotherhood of Locomotive Firemen and Enginemen, had received benefits prior to 1933 for total disabilities caused by tuberculosis. In 1931 the Brotherhood amended its constitution so as to define total and permanent disability as a state of bodily incapacity as shall wholly and permanently prevent a member from engaging in any occupation, profession or business or from performing or directing any work for remuneration or profit. In 1933 the brotherhood refused to pay further benefits on the ground that Forrester and Ranev were no longer totally and permanently disabled within the meaning of the new constitution even though in the opinion of physicians they had tuberculosis in the active stage and were unable to perform physical labor without endangering their health and lives. Forrester and Ranev later instituted separate suits against the brother-

hood to recover additional benefits. From judgments in favor of the plaintiffs, the brotherhood appealed to the court of civil appeals of Texas, Austin.

In the opinion of the court of civil appeals, the trial courts had not erred in giving the following instructions:

totally disabled does not imply an absolute impossibility to perform any work. A person is totally disabled when his physical condition is such that he is unable to perform or direct any work without injury to his health, and when common prudence and the exercise of ordinary care would require him to desist from the performance of his duties.

An insurer, said the court, has the right to place such reasonable restrictions and conditions on its liabilities as it may see fit. However, when it attempts to define such limits by using relative terms whose meaning cannot be prescribed with factual exactitude, such terms must be given the meaning and interpretation placed on them in the adjudicated court decisions.

On appeal of the suit instituted by Raney, the court set forth certain cardinal principles relative to the admissibility of medical expert testimony. Statements, said the court, made by a patient to his physician as to subjective symptoms for the purpose of qualifying such physician to testify, and not for purposes of treatment, are inadmissible in evidence, and testimony as to a diagnosis based on such statements or medical history is likewise inadmissible. However, the testimony of a physician as to a diagnosis made by him from objective symptoms and from his own examination of the patient, independent of what the patient may have told him, is not inadmissible even though the patient may have made self-serving declarations to him.

Accordingly, the court of civil appeals held that the plaintiffs were totally and permanently disabled and affirmed the judgments in their favor—*Brotherhood of Locomotive Firemen and Enginemen v Forrester (Texas)* 101 S. IV (2d) 860, *Brotherhood of Locomotive Firemen and Enginemen v Raney (Texas)*, 101 S. IV (2d) 863.

Harrison Narcotic Act Administration of Narcotics as Constituting a Sale, Entrapment of Physician—Ratigan was convicted in the district court of the United States for the western district of Washington, northern division, for selling morphine by means of hypodermic administration, and not in pursuance of an order on a form issued by the Commissioner of Internal Revenue. *United States v Ratigan* 7 F. Supp. 491 abstr. THE JOURNAL, May 4, 1935, page 1665. He thereupon appealed to the United States circuit court of appeals, ninth circuit.

The indictment under which Ratigan was convicted charged that he "did feloniously sell morphine by means of hypodermic administration not in the course of the professional practice or in good faith, or for legitimate medical purposes merely for the purpose of gratifying his (purchaser's) craving for the drug not in pursuance of a written order on a form issued in blank for that purpose by the Commissioner of Internal Revenue." Ratigan first contended that the indictment did not charge an offense under the law. With this contention the circuit court of appeals disagreed. The essence of "sale" is, the court said, a transfer of the property in a thing for money. That the narcotics administered by Ratigan constituted property may not be questioned. The delivery or transfer of the narcotics by Ratigan hypodermically to the buyer and payment for this hypodermic injection were not challenged. The transaction, therefore, had all the component parts of a sale. A sale is complete when the drug is delivered whether hypodermically into the human system by request of the buyer or delivered elsewhere on his direction. It does not need to be personally handled by the buyer. The allegation in the indictment, continued the court, that the sales were made "not in the course of the professional practice of [appellant], or in good faith, or for legitimate medical purposes, he [the purchaser] being free from any disease in which morphine is indicated for legitimate medical purposes, and receiving same, as aforesaid, from [appellant] merely for the purpose of gratifying his craving for the drug," sufficiently negated the exception contained in the Harrison Narcotic Act providing that nothing contained in it should apply to the dispensing to a patient by a physician in the course of his professional practice only.

There was no entrapment in the case, in the opinion of the court. Ratigan was not led into a situation where he committed the act innocently. The stool pigeons merely presented themselves to Ratigan and solicited the drug; there was no decoy solicitation or conduct. What Ratigan did was his free, voluntary act, the stool pigeons affording the opportunity for the sale of the drug. The defendant admitted administering from eighty-eight to 100 treatments daily, averaging approximately 4 grains, more or less, each, and that he purchased, during 1935, 194,000 one-half grains, or 97,000 grains of the drug. The evidence indicated, the court said, that Ratigan administered 29,720 grains not purchased on order blanks. The judgment of conviction was therefore affirmed—*Ratigan v United States* 88 F. (2d) 919.

Accident Insurance "Total and Permanent Disability" Defined—The defendant insurance company promised to pay certain benefits to the plaintiff if he sustained an accidental injury that would "wholly and continuously disable the insured from transacting any and every kind of business pertaining to any occupation." As the result of an automobile accident the plaintiff lost the use of his right hand and arm and was thereafter unable to perform the manual duties connected with his customary occupation as a distributor of beer by truck. He did, however, continue his business by employing and supervising help and was thus able to prosper. He later sued the defendant insurance company, claiming that he had become totally and permanently disabled. From a judgment in his favor, the insurance company appealed to the Supreme Court of Arkansas.

Clauses similar to the one in the insurance policy in question said the Supreme Court, have been construed by this court to mean that an insured is totally and permanently disabled when the injuries received prevent him from performing or executing all the substantial and material acts of his business in the usual and customary way. In the opinion of the court the jury was warranted in finding from the evidence that the plaintiff had become totally and permanently disabled within the meaning of the clause in question. He was no longer able to drive his truck and load and unload the same in person which were material and substantial acts in conducting the business of distributing beer. The court also pointed out that as a result of his injury he was no longer able to perform the duties necessary in the operation of a steam shovel, repairing automobiles and doing carpenter work, which were the only other occupations he had been trained to follow.

Accordingly, the Supreme Court affirmed the judgment in favor of the plaintiff—*Monarch Life Ins. Co. v Riddle (Ark.)*, 101 S. IV (2d) 781.

Hospitals Liability of Charitable Hospital for Injury to Pay Patient—A pay patient in a hospital, said the court of appeals of Georgia, division 2, classified and operated primarily as a charitable institution, who is injured through the negligence of the hospital, may recover damages from the hospital for such injuries although the recovery will be restricted to the income derived from pay patients or other noncharitable sources—*Robertson v Executive Committee of Baptist Convention (Ga.)* 190 S. E. 432.

Society Proceedings

COMING MEETINGS

- American Academy of Orthopedic Surgeons Los Angeles Jan. 11 Secretary
- Dr. Carl E. Badgley, 1313 East Ann St., Ann Arbor Mich. Secretary
- American Society of Tropical Medicine New Orleans Nov. 30 Dec. 3
- Dr. A. Paul Hudson, Dept. of Bacteriology, Ohio State Univ.
- Columbus Ohio Secretary
- Society for the Study of Asthma and Allied Conditions New York Dec. 11
- Dr. W. C. Spain, 116 East 53d St., New York Secretary
- Society of American Bacteriologists Washington D. C. Dec. 2-3
- Dr. I. L. Baldwin, College of Agriculture, University of Wisconsin
- Madison Wis. Secretary
- Southern Medical Association New Orleans Nov. 30 Dec. 1
- Mr. C. J. Loran, Empire Bldg., Birmingham Ala. Secretary
- Southern Surgical Association Birmingham Ala. Dec. 7-9
- Dr. Al. Ochsner, 1430 Tulane Ave., New Orleans Secretary
- Western Surgical Association Indianapolis Dec. 3-4
- Dr. Al. Montgomery, 122 South Michigan Blvd., Chicago Secretary

Current Medical Literature

AMERICAN

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Alabama Medical Association Journal, Montgomery 7 145 180 (Oct.) 1937

- Certain Phases of Pediatric Urology H W McKay Charlotte N C —p 145
*Simple Cysts of the Ovary Their Clinical Importance E V Stabler, Greenville —p 150
The Dietitian Anna M Tracy Tallahassee Fla —p 155
Paget's Disease (Osteitis Deformans) M Barfield Carter Birmingham —p 157
The Old School and the New S Graves University —p 163

Simple Cysts of the Ovary—Stabler selected ninety-three patients for his discussion because their symptoms seemed to relate directly to the ovary, both preoperatively and postoperatively. Follicular, luteum and retention cysts were generally the rule. All the patients had cystic ovaries that were diagnosed at the time of operation. Two symptoms were common to all cases, a boring type of pain in one or both sides, and an increase of pain at menstruation, of a bearing down type. Fifty-five patients had pain in the back, fifty-three had pain down the leg, fifty-eight had regular menstruation, twenty-three had irregular menstruation and thirty-seven had to go to bed because of pain at the menstrual period. His treatment was the resection of the ovary, removing all cystic tissue if as much as one sixth of the ovarian tissue could be left, removal of the entire ovary if the whole ovary was cystic, puncture of the cysts when only a few cysts were found. In all patients, when it was deemed advisable, who were more than 36 years of age, the entire ovary was removed if it was cystic, both ovaries if both ovaries were cystic. Postoperative results, which range from six years to four months show freedom from pain in forty-seven cases, pain after operation that corresponded to the resected ovary in thirty-two cases, pain after operation that corresponded to the removed ovary in fifteen cases and pain after operation believed to be due directly to the remaining ovarian tissue in twenty-three cases. The regularity of menstruation improved in thirty-three cases, menstruation was unimproved in seventeen cases, the menstrual cycle was shorter and the flow more moderate in sixty cases, forty-one patients were apparently improved and five were apparently unimproved. Recognition of or the failure to recognize, the clinical importance of multiple follicular, luteum or retention cysts of the ovary may result in the success or failure of a major surgical procedure as far as the clinical results to the patient are concerned.

American Heart Journal, St. Louis

14 383 514 (Oct.) 1937

- Factors Affecting Vascular Tone W B Cannon, Boston —p 383
Studies in Pathology of Vascular Disease M C Wintermiltz R M Thomas and P M LeCompte New Haven Conn —p 399
Hypertension Produced by Constriction of Renal Artery in Sympathectomized Dogs N E Freeman Philadelphia and I H Page New York —p 405
Physiologic Effects of Extensive Sympathectomy for Essential Hypertension E V Allen and A W Adson Rochester Minn —p 415
Observations on Phlebitis F A Edwards Boston —p 428
Pathologic Basis for Intermittent Claudication in Arterio sclerosis J R Neal New Orleans —p 442
Interpretation of Arterial Elasticity from Measurements of Pulse Wave Velocities I Effect of Pressure J M Steele New York —p 452

Pathologic Basis for Intermittent Claudication—Neal presents an analysis of the vascular changes as demonstrated by arteriography in forty-one cases in which intermittent claudication was the predominant symptom and in all of which the basic vascular pathologic change was arteriosclerosis. In most cases other signs and symptoms of vascular degeneration were present in addition to the pain due to exercise and in

eight cases gangrene of one or more toes was also exhibited. There was a wide variation in the duration and severity of the pain due to exercise. In twenty-one cases there was complete femoral or popliteal (or both) obstruction at some part of one of the large trunks. In six cases there was a definite, marked narrowing of the lower femoral and the popliteal arteries, although in no instance was the obstruction complete. The collateral circulation in these cases varied considerably. In all the cases in which one or more of the large trunks was completely obstructed or markedly narrowed, there was diminution in the number of functioning muscular branches. This was particularly evident in the smaller branches, and some arteriograms showed large areas of muscle devoid of any small muscular branches. In fourteen cases the large vessels of the extremity were patent throughout their course and their lumens were within normal range. Sometimes their course was tortuous but there were no points of constriction or obstruction. Here the defect was in the small muscular branches. The single abnormality common to all these cases is the obstruction of the small muscular branches with their fine terminal twigs. The obliterative process may affect all the muscles of the extremity, or a single muscle, or even an isolated portion of some muscle. Further proof that it is the obliteration of these fine vessels which is responsible for the impairment of muscular function is supplied by repeated arteriographic studies on patients whose intermittent claudication has improved under treatment, in which there is an increase in the number and size of the fine terminal arteries, as well as an improvement in their distribution. It is the abnormal distribution of the blood supply and the inaccessibility of certain portions of the muscles which produce impaired nutrition.

American Journal of Anatomy, Philadelphia

61 343 524 (Sept.) 1937

- Normal and Interrupted Vascular Patterns in Intestinal Mesentery of the Rat Experimental Study on Collateral Circulation Helen Blanche Weyrauch, San Francisco and C F De Garis Oklahoma City —p 343
Development of Mammary Gland of the Rat Study of Normal Experimental and Pathologic Changes and Their Endocrine Relationships E B Astwood C F Geschickter and E O Rausch Baltimore —p 373
Study of Effect of Experimental Stasis in Lymphatic Channels on Lymphocyte Content with Especial Reference to Plasma Cells H E Jordan and C B Morton Charlottesville Va —p 407
Normal Human Ovary in Stage Preceding Primitive Streak (The Edwards Jones Brewer Ovary) J I Brewer Chicago —p 429
Effects of Estrin Progesterone Combinations on Endometrium Vagina and Sexual Skin of Monkeys F L Hissaw R O Greep and H L Fevold Cambridge Mass —p 483
Glomerular Elimination of Indigo Carmine in Rabbits R T Kempton, P A Bott and A N Richards Philadelphia —p 505

American Journal of Clinical Pathology, Baltimore

7 347 466 (Sept.) 1937

- The Future of Pathology R R Kracke, Emory University Ga —p 347
Specific Artificial Immunity in Tuberculosis H J Corper M L Cohn and A P Damerow Denver —p 360
Monilia Infection of Lungs (Bronchomycosis) A Ikeda Minneapoli —p 376
Occurrence of Squamous Cell Carcinoma in Lining Epithelium of an Ovarian Dermoid Cyst Brief Review of Literature M J Icin and R Hobart Montclair N J —p 389
*Hemolysis of Red Cells in Nephritis in Saponin Systems T J C Herrald and M Pijoan Boston —p 404
Intracranial Arterial Aneurysms N Enzer and E D Schwade Milwaukee —p 418
Some Possible Effects of Nursing on Mammary Gland Tumor Incidence in Mice J J Bitner Bar Harbor Maine —p 430
Hematologic Observations on Bone Marrow Obtained by Sternal Puncture P Vogel L A Erf and N Rosenthal New York —p 436

Hemolysis in Nephritis in Saponin Systems—Herrald and Pijoan consider the exact relationship of cell and serum components in standardized saponin systems. Their investigation proceeded along two lines: the hemolysis by saponin of washed red cells and the effect on hemolysis of serum from nephritic patients. The principle of the method they employed is that described by Ponder in which the lysis (saponin) is added quantitatively to a known volume of washed red cells in saline solution and the velocity of hemolysis noted. It was found that the serum of patients with glomerulonephritis has a marked inhibitory effect on hemolysis by saponin. The reason for this is not clear. Work is now being carried out to deter-

mine the relationships of the various lipoids and proteins in the serum to this phenomenon. It is conceivable that, if there are substances which affect the red cell membrane in any way altering their reaction to saponin, these substances may play a part in influencing red cell metabolism in disease.

American Journal of Diseases of Children, Chicago

54 699 972 (Oct.) 1937

- Periodic Accrediting of Households. Economical Auxiliary Method for Controlling Human Tuberculosis Suitable for Use in Private Practice. C A Stewart, Minneapolis—p 699
- *Investigations on Hemophilia. W M Bendien and S van Creveld, Amsterdam, Netherlands—p 713
- Stabilizing Effect of Increased Vitamin B (B_1) Intake on Growth and Nutrition of Infants. Basic Study. M W Poole, B M Hamil, T B Cooley and Icie G Macy, Detroit—p 726
- *Relation of Increased Vitamin B (B_1) Intake to Mental and Physical Growth of Infants. Preliminary Report. Martha G Colby, Ann Arbor, Mich; Icie G Macy, M W Poole, B M Hamil and T B Cooley, Detroit—p 750
- Rate of Apposition of Enamel and Dentin, Measured by Effect of Acute Fluorosis. I Schour and H G Poncher, Chicago—p 757
- Human Passive Transfer Antibody. II Neutralization of Antigen. W M Schmidt and V W Lippard, New York—p 777
- Osteodystrophia Fibrosa. Report of Case in Which Condition Was Combined with Precocious Puberty, Pathologic Pigmentation of the Skin and Hyperthyroidism with Review of Literature. D J McCune and Hilde Bruch, New York—p 806

Investigations on Hemophilia.—Bendien and van Creveld discuss the fact that in normal fresh plasma and serum a substance is present which exerts a coagulation-promoting influence on hemophilic plasma and blood. A method is described for precipitation of the coagulation-promoting substance from normal fresh serum by slight acidifying. A simpler method is also described, i.e., adsorption and elution, by which the coagulation-promoting substance can be obtained from fresh normal serum in a medium poor in proteins. By dissolving the coagulation globulin (which was precipitated from the serum by slight acidifying) in water or in physiologic solution of sodium chloride to which has been added 3 or 4 per cent of sodium carbonate, it can be dissolved in a volume which is ten times as small as the volume of the normal serum from which it has been prepared. The solution is free from cholesterol and lipid phosphorus. The solutions as obtained by the method described showed an activity which was about five times as great as that of the fresh serum itself. These solutions remained active much longer than the serum itself when kept in the refrigerator. Oral, intramuscular or intravenous administration of the coagulation-promoting substance has been tried in three patients with hemophilia. In one patient the coagulation time had been kept repeatedly within normal limits for some days by an intravenous injection.

Relation of Vitamin B Intake to Mental and Physical Growth.—Colby and her co-workers made psychologic observations of the mental and physical growth of artificially fed infants who lived in their own homes and were cared for by their parents. At the initial observation in the growth clinic all the babies were $2\frac{1}{2}$ months of age or less, the minimum age was 5 days and the average age $5\frac{1}{2}$ weeks. An effort was made to determine the nutritive advantage to the health, the related growth-promoting phenomena and the bone-building value of supplementary amounts of vitamin B in the form of a water extract of rice polishings. Criteria for the estimation of the nutritive advantages were looked for in monthly medical examinations, according to which an increase of from 30 to 50 per cent in the intake of vitamin B appeared to produce more regular, though not consistently greater, growth in infants, as judged by the group averages of the various measurements. Increased amounts of vitamin B in the diet seemed to promote a more stabilized growth and greater nutritional stability. The general mental picture of the infants receiving increased amounts of vitamin B may perhaps be qualitatively summarized as one of slightly accelerated maturation in basic behavior patterns (except the sympathetic), augmented alertness in attention and perception phenomena and slightly accelerated adaptive behavior patterns (learning). All available data on vitamin B seem to indicate some close interaction in the infant between the metabolism and the development of external behavior. The nature of this interaction can be shown only by further and more highly controlled observations.

American Journal of Hygiene, Baltimore

26 197 422 (Sept.) 1937 Partial Index

- Study of Hetero Allergic Reactivity of Tuberculin Desensitized Tuberculous Guinea Pigs, in Comparison with Tuberculous and Normal Guinea Pigs. Margaret W Higginbotham, Baltimore—p 19
- The Incidence of Fungi in Various Disease Conditions. E L McClellan and Elizabeth Pinkerton, Omaha—p 224
- Comparative Study of Various Methods for Cultivation of Tubercle Bacilli from the Blood. Mildred M Galton, Baltimore—p 259
- Studies on Nature of Immunity to Intestinal Helminths. VI General Resume and Discussion. A C Chandler, Houston, Texas—p 309
- Age Resistance in Laboratory Rats to Infection with *Strongyloides*. Ratti, A J, Sheldon, Baltimore—p 355
- Effect of an Excess of Vitamin C on Natural Resistance of Mice to Guinea Pigs to Trypanosome Infections. D Perla, New York—p 374
- Relative Potency of Monovalent and Polyvalent Antimenigeoencephalitis Serums. Mary B Kirkbride and Sophia M Cohen, Albany, N Y—p 382
- Comparison of Typhoid O and H Agglutinin Responses Following Intracutaneous and Subcutaneous Inoculation of Typhoid Paratyphoid A and B Vaccine. R M Perry, Durham, N C—p 388
- Satisfactory Method of Isolating Tetanus Organisms from Mixed Material. E C Gilles, Baltimore—p 394
- Study of Biochemical Reactions of Strains of *Clostridium Tetani* Isolated from Street Dust. E C Gilles, Baltimore—p 401
- Glycosuria and Intestinal Trichomonads in the Diabetic. J Andrews and J W Landberg, Baltimore—p 416

American J Obstetrics and Gynecology, St Louis

34 549 730 (Oct.) 1937

- Vascular Factor in Toxemias of Late Pregnancy. N J Eastman, Baltimore—p 549
- Cardiac Functional Capacity as an Aid to Prognosis During Pregnancy. H E B Pardee, New York—p 557
- Hypertension, Nephritis and Toxemias of Pregnancy. R G Douglas, New York—p 565
- *Incontinence of Urine in Female, Urethral Sphincter Mechanism, Damage of Function and Restoration of Control. W T Kennedy, New York—p 576
- Bissell Operation for Cystocele. H Grad, New York—p 589
- Methods and Results of Treatment in Carcinoma of Cervix at the Memorial Hospital. W P Healy and E L Frazell, New York—p 593
- Analysis of 300 Consecutive Cases of Primary Cervical Repair. G A Wood, Syracuse, N Y—p 606
- *Effect of Pregnancy on Malignant Tumors. F R Smith, New York—p 616
- Chemical Determination of Pregnancy by Visscher-Bowman Technique. C Drabkin and S Goldschmidt, St Louis—p 634
- Effect of Estrin on Basal Metabolism Rate and Nervous Symptoms of Ovarietomized Women. Mary E Collett, J T Smith and Grace E Wertenberger, with collaboration of D M Harlow, Faith W Reed and Sara J Long, Cleveland—p 639
- Studies on Dried Blood Serum of Women. A M Hellman and G Musa, New York—p 656
- Worth While Surgery in the New Born. J A Harrar, New York—p 661
- Obstetric Analgesia with Acid Alurate in Rectal Ether Oil. H C Ingraham and J A Rosen, New York—p 672
- Clinical Experience with a New Ergot Alkaloid. J E Treitch and K H Behm, New York—p 676
- Testicular Tubular Adenoma (Pick). J R Miller, Hartford, Conn.—p 680
- Tetanus Associated with Criminal Abortion. G G Komaromy, Cleveland—p 687

Incontinence of Urine in the Female.—Kennedy believes that the external sphincter exerts little force in preventing the escape of urine from the bladder, the normal internal involuntary sphincter alone may have sufficient power to prevent the escape of urine from the bladder. When the free involuntary internal sphincter is enhanced by the normal voluntary sphincter, the control is quite positive. He outlines an operation for the restoration of sphincter control. He describes the sphincter mechanism as made up of a free involuntary sphincter surrounding the inner third of the urethra supported and enhanced by a voluntary sphincter composed of the anterior portions of the levator muscles, which unite in a median raphe beneath the urethra. The sphincter mechanism lies around and beneath the middle third, having more and stronger fibers in this location. A woman who has never had a labor but who begins to suffer a partial incontinence of urine due to loss of sphincter control may have had an incomplete union of the fibers composing the involuntary sphincter and the voluntary sphincter. Labor may injure (1) separately the involuntary sphincter by directly or indirectly causing it to be distorted and fixed to the ramus of the pubis, thereby markedly diminishing its function as a sphincter and (2) separately the voluntary sphincter by splitting its fibers parallel to the urethra in or adjacent to the median raphe and (3) conjointly at the same labor 1 and 2. O

twenty-eight patients, twenty-six have had urinary control restored, one has an incontinence which may not be permanent and one has sufficient incontinence which may require a second operation

Effect of Pregnancy on Malignant Tumors—During the last ten years Smith collected fifty-four instances in which patients with malignant tumors also had one or more pregnancies occurring either simultaneously with the appearance of the tumor or following its treatment. He reviews this series to determine whether pregnancy had a detrimental effect on the malignant tumors. He concludes that pregnancy is detrimental and should be prevented in patients having unarrested malignant tumors. Growing malignant tumors may be temporarily retarded by pregnancy, but the growth is accelerated after the termination of the pregnancy. Pregnant patients with malignant tumors have a better prognosis if (1) the pregnancy is not interrupted, (2) the pregnancy follows treatment of the tumor rather than occurs simultaneously with it, (3) in patients becoming pregnant after the tumor therapy, more rather than less than two years has elapsed since the tumor therapy, (4) in the breast and nongenital groups the patient has not aborted, regardless of the time relationship of the pregnancy to the occurrence of the tumor and (5) the breast and genital tumors are treated before the end of the pregnancy. If the patient has aborted, there is some slight advantage in early over late abortion in the nongenital group, but a distinct disadvantage in the breast group and total. All groups fared better if abortion did not occur, regardless of the stage of the pregnancy when first seen. Abortion was especially disastrous to primigravid women, whereas both primigravid and multigravid women did about equally well if abortion had not occurred. Irradiation of the breast and nongenital tumors in pregnant women has no tendency to produce malformed babies. In the genital group irradiation of the pelvic regions will usually produce abortion in the early months of pregnancy. In the latter months of pregnancy, carcinoma of the cervix can be irradiated locally without affecting the fetus or producing abortion. Of forty-one known viable normal offspring at birth, only twenty-five could be traced and these aged 1 to 10 years, show no evidence of any bad effects from tumor therapy.

American Journal of Pathology, Boston

13 679 880 (Sept.) 1937

- Arteriole Sclerosis in Hypertensive and Nonhypertensive Individuals A. R. Moritz and M. R. Oldt, Cleveland—p. 679
Intranuclear Inclusion Bodies in Tissue Reactions Produced by Injections of Certain Foreign Substances P. K. Olitsky and C. G. Harford New York—p. 729
Viable Pneumococci and Pneumococci Specific Soluble Substance in Lungs from Cases of Lobar Pneumonia R. N. Nye and A. H. Harris 2d Boston—p. 749
*Role Played by Rheumatic Fever in Implantation of Bacterial Endocarditis L. Gross and B. M. Fried New York—p. 769
Effects of Coal Smoke of Known Composition on Lungs of Animals Lucy Schnurer and S. R. Maythorn Pittsburgh—p. 799
Postmortem Elasticity of Adult Human Aorta Its Relation to Age and to Distribution of Intimal Atheromas S. L. Wilens New York—p. 811
Localized Congenital Defects of Cardiac Interventricular Septum Study of Three Cases D. G. Mason and W. C. Hunter Portland Ore—p. 835
*Hyperplasia and Regeneration of Myocardium in Infants and in Children H. E. MacMahon Boston—p. 845
Morphologic Changes in Superior Vena Cava and Right Atricle in Rheumatic Heart Disease E. Waaler New York—p. 855
Torsion Infection J. T. Crone, A. F. DeGroat and J. G. Wahlm Little Rock Ark—p. 863

Rheumatic Fever and Bacterial Endocarditis—Gross and Fried describe the changes in the hearts in forty-two cases of subacute bacterial endocarditis and twenty-eight cases of acute bacterial endocarditis. While there is no sharp line of distinction between these conditions and a variety of lesions are common to the two, certain features are of aid in classifying the bacterial endocarditis into these two categories. An important, differentiating histologic feature is the spongy lesion that occurs in its typical form, perhaps exclusively, in subacute bacterial endocarditis. About 75 per cent of the hearts of patients having bacterial endocarditis had been the seat of a previous rheumatic process. Activity of a rheumatic infection is not a necessary precursor to the development of bacterial endocarditis. Aschoff bodies were encountered in about 30 per cent of the superimposed cases of acute and subacute bacterial endocarditis. Some of these cases were thrown into activity

by the superimposed bacterial infection, rather than the activity of the rheumatic process predisposing to the bacterial endocarditis. Certain mechanisms by which the endocardial structures are predisposed to a bacterial implantation include the formation of eosinophilic necrosis of the valve closure line and thrombotic proliferative and necrotic changes at these sites. Some of these alterations are brought about by the hemodynamics present in congenital and acquired defects. Others are probably due to inflammatory, toxic or degenerative processes. The endocardial alterations, together with intracardiac tension, seem to predispose the endocardial structures of the heart to bacterial implantation by providing suitable means for anchoring transient bacterial invaders. Some of these mechanisms are present in nonrheumatic valves, but less frequently than in rheumatic valves. It does not appear that the vascularization occurring in rheumatic valves plays an appreciable part in the implantation of bacterial endocarditis.

Hyperplasia and Regeneration of Myocardium—MacMahon points out that in cardiac hypertrophy of infants there may be an active proliferation of myocardial elements in addition to growth by enlargement of the individual muscular fibers and that during childhood the muscular fibers of the heart may regenerate following severe injury. Both of these observations are in contradiction to current opinion, which is that hypertrophied hearts of adults may be explained mathematically on the basis of an increase in the size of the individual myocardial fibers and secondly, that painstaking search throughout the myocardium in such cases of cardiac hypertrophy has failed to reveal any positive evidence in the form of mitoses, of true myocardial proliferation. This frequently recorded absence of mitoses is also the most important single fact on which the statement that the muscular fibers of the heart cannot regenerate is based. Evidence is presented in the form of mitotic division of the nuclei of the muscular fibers of the heart to indicate that in cardiac hypertrophy of infants a proliferation of the muscular fibers of the heart can take place and that in severe myocardial injury in children regeneration of myocardial elements can occur.

American Journal of Physiology, Baltimore

120 213 422 (Oct.) 1937 Partial Index

- Purification of Adrenal Extracts and Isolation of an Activator of Male Sex Hormones M. Ebreinstein and S. W. Britton Charlottesville Va—p. 213
Carbohydrate Mobilization M. Caroline Hrubetz and S. N. Blackberg New York—p. 222
Effect of Hypophysectomy on Arterial Blood Pressure of Dogs with Experimental Hypertension I. H. Page and J. E. Sweet New York—p. 238
New Physiologic Variable Associated with Sensible and Insensible Perspiration A. P. Gagge New Haven Conn—p. 277
Physiologic Reactions of Human Body to Various Atmospheric Humidities C. E. A. Winslow, L. P. Herrington and A. P. Gagge New Haven Conn—p. 288
Relation Between Blood Osmotic Pressure, Fluid Distribution and Voluntary Water Intake A. Gilman New Haven Conn—p. 323
*Effect of Posture on Cardiac Output H. M. Sweeney and H. S. Mayer son New Orleans—p. 329
Secretin Is a True Chologogue C. A. Tanturi, A. C. Ivy and H. Greenfield Chicago—p. 336
Reflex Inhibition of Knee Jerk from Intestinal Organs J. G. Dussier de Barenne and A. A. Ward Jr New Haven Conn—p. 340
Basal Insulin Requirement of Pancreatectomized Dogs P. O. Greeley with technical assistance of S. Benson, J. Fraleigh, V. Goodhill, G. Jacobson and M. Kamins Los Angeles—p. 345
Late Effects of Bilateral Resection of Splanchnic Nerves on Human Gastric Motor Mechanism L. E. Barron and G. M. Curtis Columbus Ohio—p. 356
Influence of Adrenalectomy on Liver Fat as Varied by Diet and Other Factors E. M. MacKay San Diego Calif—p. 361
Physiologic Properties of Central Excitatory Agent in Fluid Obtained by Occipital Puncture of Man and Animals I. H. Page New York—p. 392
Distribution in Body Fluids and Excretion of Ingested Ammonium Chloride Potassium Chloride and Sodium Chloride J. Bourdillon, New York—p. 411

Effect of Posture on Cardiac Output—Sweeney and Mayerson made 200 determinations on the effect of posture on cardiac output in five subjects. Each subject was observed at intervals over a period of from four to six months. The original Grollman acetylene method and the Gladstone modification were used for the study. There was a consistent decrease in output on quiet standing as contrasted to recumbency. The average change per subject with the Gladstone method ranged from 5 to 26 per cent for all determinations and from 8 to 36 per

cent for paired observations. Greater differences were obtained when the Grollman method was used. Measurement of the acetylene diffusion during the rebreathing procedure gives no evidence of recirculation occurring in the recumbent position within twenty-three seconds. In the standing and sitting positions acetylene diffusion is retarded after about ten seconds, indicative of recirculation. Adequate mixing can be obtained by the Gladstone rebreathing procedure within four or five seconds and consistent results can be obtained by use of this method in the standing and sitting positions. The two methods give similar results in the recumbent position.

American Journal of Public Health, New York

27 965 1078 (Oct.) 1937

- The Early American Public Health Movement R. H. Shryock, Durham N. C.—p. 965
Improved Medium for Demonstration of Hydrolysis of Sodium Hippurate by Streptococci Julia M. Coffey and G. E. Foley Albany, N. Y.—p. 972
Maternity Care in Rural Areas by Public Health Nurses Helen A. Bigelow Albany, N. Y.—p. 975
The Homicide Situation in the United States R. N. Whitfield, Jackson Miss.—p. 981
*Vaccines Against the Common Cold: Are They of Value in Industrial Health Program? L. D. Bristol New York.—p. 987
Staphylococci in Raw Oysters J. C. Geiger and A. B. Crowley San Francisco.—p. 991
Bacteriologic Survey of Telephone Instruments Under Various Conditions of Use C. B. Coulter and Florence M. Stone New York.—p. 993
Is Routine Examination and Certification of Food Handlers Worth While? W. H. Best New York.—p. 1003
Scoops as Source of Contamination of Ice Cream in Retail Stores A. J. Krog and Dorothy S. Dougherty Plainfield, N. J.—p. 1007
Effects of Inhalation of Smoke from Common Fuels Lucy Schnurer Pittsburgh.—p. 1010
Are Postmortem Statistics on Trichinosis Valid for the Living Population? W. Sawitz, New Orleans.—p. 1023
An Outbreak of Typhoid Fever in Grand Rapids, Mich. J. L. Lavan Grand Rapids, Mich.—p. 1025
Changing Public Health Practices and Problems A. Wolman Baltimore.—p. 1029

Vaccines Against the Common Cold—Bristol gives the results of treatment with standard stock vaccines or serobacterins from cultures of the common pathogenic microorganisms of the respiratory tract in six separate groups of industrial subjects (totaling more than 19,000). The time over which this treatment against the common cold was available to the different groups varied from seventeen to five years. On the whole the study indicates an apparent reduction in the severity, duration and complications of acute respiratory diseases. There is little evidence that such vaccines have materially reduced the incidence of the common cold. To the extent that such vaccines reduce the length of disability and absence from work, they apparently may be of some value in the industrial health program. While no one procedure alone, such as the use of vaccines, should be relied on entirely to build resistance against colds, a broad program of preventive treatment should be encouraged particularly among cold-prone employees, in cooperation with their family physicians.

American Journal of Surgery, New York

38 1226 (Oct.) 1937 Partial Index

- Relation of Water Sodium Chloride and Acid Base Balance to Renal Function in Treatment of Lesions of Urinary Tract H. C. Habern and R. E. Mulrooney Rochester, Minn.—p. 6
*Diagnosis and Treatment of Perinephric Abscess Renal Fixation a New Roentgenographic Diagnostic Sign C. P. Mathe San Francisco.—p. 35
Diagnosis and Indications for Treatment of Renal Tuberculosis G. J. Thomas T. L. Stebbins and C. K. Petter Minneapolis.—p. 57
*Diagnosis and Treatment of Movable Kidney W. P. Herbst Washington D. C.—p. 66
Incidence and Prevention of Renal and Vesical Calculi in Fracture and Traumatic Group E. J. McCague Pittsburgh.—p. 85
Complications Following Prostatic Resection H. C. Bumpus Jr. Pasadena, Calif.—p. 89
Infiltrating Cancer of Bladder Involving Trigon Treatment R. S. Ferguson New York.—p. 137
Elusive Ulcer (Hunner) of Bladder with Experimental Study of Etiology R. H. Herbst G. O. Baumrucker and K. L. German Chicago.—p. 152
Hormone and Surgical Bases for Treatment of Undescended Testes C. L. Deming New Haven, Conn.—p. 186
Total Cystectomy for Infiltrating Carcinoma of the Bladder E. Beer New York.—p. 192

Diagnosis and Treatment of Perinephric Abscess

The new x-ray sign for the diagnosis of suppurative perinephritis that Mathe discusses consists of renal fixation evidenced by making retrograde or intravenous pyelograms in the reclining

and standing positions. This sign occurs early, is present in all cases, and has been repeatedly verified by operation or by necropsy. It was the only positive x-ray sign encountered in twenty-seven proved cases of perinephric abscess in which a complete urologic examination was made. The early diagnosis and intelligent treatment of suppurative perinephritis depends on a thorough knowledge of all types of cases (primary hematogenous, perinephric abscess secondary to kidney lesions and paranephric abscess secondary to lesions of neighboring organs). Important signs and symptoms are persistent remittent fever, leukocytosis, fulness in the loin or abdomen with a relative paucity of chemical changes in the urine. Corroborative x-ray signs are renal fixation, obscuration of the psoas muscle and kidney outline, displacement of the kidney and ureter revealed by stereoscopic films, opaque shadow cast by abscess, curvature of the spine, displacement of the colon and fluoroscopic evidence of disturbance of respiratory synchronism and the presence of a wave in the cavity of the abscess. Treatment of perinephric abscess consists of prophylactic measures instituted to relieve infectious processes, in order to prevent invasion of the blood stream and later metastatic infection of the perinephrium. Surgical drainage with sufficient exposure to permit search for walled off pockets, examination of the kidney for cortical abscess formation and adequate drainage is recommended. Two stage nephrectomy is advised in grave cases of perinephric abscess secondary to destructive inflammatory processes of the kidney.

Diagnosis and Treatment of Movable Kidney—Herbst believes that to demonstrate ptosis urographically one of the following methods should be used: (1) Urograms must be taken in the prone and upright position, (2) serial urograms should be taken with different phases of respiration (from that of complete expiration to extreme inspiration), (3) the method of serial pyelography practiced by Moore is perhaps the most practical because it can be done with least difficulty, (4) the method of Jarre and Cumming is valuable, (5) the best method is direct fluoroscopy using skodan with retrograde ureteral catheter injection, with the patient in both the prone and upright positions and (6) the ideal method would be motion picture film records of the fluoroscopic visualization following the intravenous administration of some compound that would be excreted in sufficient concentration to render fluoroscopic visualization satisfactory. The treatment of ptosis of the kidney presents individual problems. Nephropexy in properly selected individuals is productive of as large a proportion of satisfactory results as any surgical procedure. The individual with marked ptosis of the third degree with severe symptomatology will not respond to belts or increase in weight and therefore nephropexy should be performed, the following principles being observed: 1. The kidney and upper part of the ureter should be completely mobilized so that, regardless of the position in which the kidney may be fixed, the relationship of the upper part of the ureter and pelvis may allow of proper accommodation. 2. In view of the fact that the production of pain may be prevented by interference with the nerve supply to the kidney, stripping of the nerves from the renal pedicle should be done. Stripping the nerves from the renal pedicle will remedy most of the pain-producing abnormal motility syndromes, which may or may not have been recognized. 3. The bed in which the kidney is to lie should be well cleared of fat so that satisfactory adhesions may form. The height at which the kidney is fixed is not important. The main factor is that it be fixed in a position at which the renal pelvis may accommodate itself satisfactorily to the upper part of the ureter and at which the various forces will have the least possible chance of pulling it downward and again disturbing the ureteropelvic relationship. In the treatment of ptosis of the second degree, conservative methods should be tried before operation is resorted to. When these expedients fail or when definite hydronephrosis develops, nephropexy should be performed. In the first degree of ptosis much patience should be displayed in attempting to relieve the complaint by the putting on of weight, abdominal pads, and the use of the various drugs that control neuromuscular dysfunction. Ureteral dilation will occasionally relieve symptoms but usually calls for repeated dilation. Nephropexy is the procedure of choice in individuals who will not respond to conservative treatment or who have hydronephrosis.

American Review of Tuberculosis, New York

36 437 576 (Oct.) 1937

- Pleural Fluid in the Course of Artificial Pneumothorax J M Nicklas R M Franklin and W A Zavod, Valhalla N Y—p 437
Nature of Pleural Effusions Complicating Artificial Pneumothorax E Mayer and M Dworkin New York—p 461
*Massive Pleural Effusions in Artificial Pneumothorax Their Influence on Underlying Pulmonary Tuberculosis M B Rosenblatt New York—p 467
A Five Year Review of Tuberculosis in College Students L H Ferguson Cleveland—p 478
Phrenicectomy Reinforced by Pneumoperitoneum F Fremmel Chicago—p 488
Pulmonary Rest by Limitation of Costal and Diaphragmatic Excursion A B Steele Santa Barbara Calif—p 506
Varying Duration of Arrested Stage Plea for Revision of Present Classification Standards L H Fales and E A Beaudet Livermore, Calif—p 511
*Lower Lobe Tuberculosis W H Weidman and H B Campbell Norwich, Conn—p 525
The Brain in Chronic Tuberculous Meningitis B J Alpers and R A Matthews Philadelphia—p 542
Isolation of Acid Fast Bacteria from Soil Ruth E Gordon and W A Hagan Ithaca N Y—p 549
Relationships Between Free Living Thermal Ciliates and Ingested Acid Fast Bacteria Lucia J Dunham—p 553
Red Cell Sedimentation in Pulmonary Tuberculosis R Volk, Boston—p 567

Massive Pleural Effusions in Artificial Pneumothorax

—Rosenblatt states that between 1920 and 1935 there were nine cases at the Tuberculosis Division of the Montefiore Hospital in which a massive effusion occurring in the course of artificial pneumothorax was permitted to remain intact with subsequent abandonment of the pneumothorax. No unfavorable complications materialized and the ultimate results were far better in this group than in the entire group of all pneumothorax cases. One of the important objections to permitting pleural effusions to remain intact is the danger of their becoming purulent. In the seven cases in which the pleural fluid was aspirated there were no instances of empyema. However, in two of them the fluid was turbid. These were the cases in which the greatest number of aspirations was made. Another major objection was that the fluid, if it did not become purulent, would remain unabsorbed for a long period and embarrass the patient's condition in many ways. The patients who were followed up after discharge showed complete absorption of the fluid with only residual thickening of the pleura. Retraction of the trachea or mediastinum was slight and did not cause respiratory or cardiac difficulties. Following the absorption of the fluid no cavities remained opened. On the contrary, the pulmonary disease seemed healed in a most effective manner with only scattered fibrotic infiltrations as scars of the former caseating lesions. Another objection is that the presence of the fluid will result in the formation of adhesions which would prevent the continuation of pneumothorax at a later date if it should become necessary. Whether it was a mechanical or a biologic action cannot be ascertained, but the ultimate results obtained seemed to be final and the question of reestablishing pneumothorax did not arise. The period of active therapy was shortened. While the massive effusion did not abruptly alter the patient's clinical condition the subsequent clinical course was one of improvement. The average duration of active therapy in these cases was far less than for pneumothorax cases in general and the results are far more encouraging. If the patient who had bilateral disease at the time pneumothorax was induced is not considered, all the patients were discharged as improved with negative sputum. Six patients who have been observed from one and a half to ten years after discharge are well and working or able to work. The author is convinced that the prognosis of the patient who has developed a massive effusion in the course of artificial pneumothorax is far better ultimately than that of the patient in whom collapse therapy is continued by removal of the fluid, that is, in dominantly unilateral cases. When the amount of fluid is insufficient to interfere appreciably with pneumothorax refills, they should be continued with no regard to the presence of the fluid, but when the effusion has reached massive proportions so that it is impossible to continue further insufflations the pneumothorax should be abandoned and the fate of the disease left with the effusion.

Tuberculosis of the Lower Lobe—Of their forty cases of tuberculosis of the lower lobe that Weidman and Campbell encountered in a review of the roentgenograms of all patients

admitted to their institution from January 1932 until October 1936 the results were unsatisfactory in nine (eight died), eleven were partially satisfactory, fourteen are satisfactory to date, five have been observed too briefly, all are improving at present and one is untreated. The results considered in the aggregate are far from brilliant, irrespective of the collapse therapy employed. They tend to substantiate the contention that tuberculosis of the lower lobe is still a definite therapeutic problem.

Annals of Surgery, Philadelphia

106 481 800 (Oct) 1937 Partial Index

- Samuel Gross Looks in on American Surgical Association E A Grabam St Louis—p 481
*Intracranial Pressure Without Brain Tumor Diagnosis and Treatment W E Dandy Baltimore—p 492
Place of Exploratory Operation in Surgery of Suppurative Abscess Report of Nine Negative Explorations E P Lehman University, Va—p 514
Control of the Heart Beat by the Surgeon, with Especial Reference to Ventricular Fibrillation Occurring During Operation C S Beck and F R Mautz Cleveland—p 525
Etiology of Cancer in Light of Our Present Knowledge J J Morton, Rochester N Y—p 539
Malignant Changes in Forestomach of Rats Related to Low Protein (Casein) Diet and Prevented with Cystine G R Sharpless, Detroit—p 562
Epithelioma of Lower Lip Suggested Routine for Treatment with Description of Operative Excision of Submental and Submaxillary Lymph Nodes R H Kennedy New York—p 577
Results and Methods of Treatment of Cancer by Radiation H Coutard Paris France—p 584
Effect of Radiation Therapy on Intracranial Gliomas L Davis and A Weil, Chicago—p 599
Place of Radium in Treatment of Cancer of Breast G Keynes London England—p 619
Carcinoma of Cervix Treated by Roentgen Ray and Radium J V Meigs and R Dresser Boston—p 653
Cancer Surgery Value of Radical Operations for Cancer After Lymphatic Drainage Area Has Become Involved C Eggers, New York—p 668
Development of Laboratory Service in Cancer Hospital J Ewing New York—p 715
Congenital Atresia of Bile Ducts E J Donovan New York—p 737
Obstructive Jaundice Cause and Prevention of Bleeding Dyscrasia H C Naffziger J L Carr and F S Foote San Francisco—p 745
Postoperative Use of Insulin in the Nondiabetic with Especial Reference to Wound Healing F B Gurd Montreal—p 761
Rupture of Lumbar Intervertebral Disk Etiologic Factor for So Called 'Sciatic' Pain W J Mixer Boston—p 777

Intracranial Pressure—During the last seven years, Dandy encountered twenty-two cases in each of which the signs and symptoms of intracranial pressure have been indubitable, and yet in none has there been an intracranial tumor or a space occupied by a lesion of any kind. Almost without exception a clinical diagnosis of unlocalized cerebral tumor has been excluded by ventriculography. All these patients have complained of headache, most of them of nausea, vomiting, diplopia, dizziness and many of loss of vision, and objectively in every instance there have been bilateral papilledema and usually hemorrhages in one or both eyegrounds to indicate that intracranial pressure was present. In each case the intracranial pressure has been demonstrated objectively and usually actually measured by ventricular or lumbar punctures. The subsequent demonstration of pressure over a period of months or years is merely a matter of inspecting the site of the subtemporal decompression to which most of these patients were subjected for treatment, with success. The increased intracranial pressure may last only a few months but at times it may persist for years. Curiously the decompression is almost never consistently at its maximal fulness but is intermittent, and the pressure may come and go with surprising rapidity—from one extreme to the other in a few minutes. The cause of the sudden changes—indeed the cause of the increased pressure at all—is unknown. It can be reasoned with safety that the increased intracranial pressure is dependent on the content of the intracranial fluid. The only other possible explanation of the increased pressure is by variations in the intracranial vascular bed, probably by vasomotor control. That the increased pressure usually sets its limit within the bounds of relief afforded by a subtemporal decompression is indeed surprising. The periodic nature of the attacks, and also the permanence of cure of four persons known to have remained well without treatment, lead to the suspicion that this condition may be a common one and that only the most severe grades are encountered by the physician, and that many of the transient, unexplainable headaches may really be instances of this condition though in lesser degree.

Archives of Internal Medicine, Chicago

60 567 734 (Oct.) 1937

- *Pneumonia Due to Type V Pneumococcus M B Rosenbluth and M Block New York—p 567
- Effect of Oxygen Injected Subcutaneously on Antibody Formation G P Youmans and T Simpson Chicago—p 574
- Classification and Terminology of Leukemia and Allied Disorders C E Forkner Peiping China—p 582
- *Shock Syndrome in Therapeutic Hyperpyrexia I Kopp and H C Solomon Boston—p 597
- Immunologic Studies of Sick Cell Anemia W W Cardozo, Chicago—p 623
- Pulsations of the Wall of the Chest IV Pulsations Associated with Adhesive Pericardial Disease W Dressler Vienna Austria—p 654
- Id V Pulsations Associated with Mitral Regurgitation and Aneurysmal Dilatation of Left Auricle W Dressler Vienna Austria—p 663
- Optic Neuritis in Hyperthyroidism Report of Case with Review of Literature R B Brown and G A Schwarz Philadelphia—p 668
- Gastric Acid During Recurrences and Remissions of Duodenal Ulcer C F G Brown and R E Dolkart Chicago—p 680
- Central Nervous System and Sugar Metabolism Clinical Pathologic and Theoretical Considerations with Especial Reference to Diabetes Mellitus A R Vonderahle Cincinnati—p 694
- Gastro-Enterology in 1936 Selected Topics G Cheney San Francisco—p 705

Pneumonia Due to Type V Pneumococcus—Rosenbluth and Block discuss their observation in sixty-eight cases of pneumonia due to type V pneumococci among 1,850 cases of pneumococcal pneumonia, giving an incidence of 3.5 per cent. The two impressive features in the incidence of the disease have been a tendency to epidemicity, evidenced by the fact that groups of four or five patients have on several occasions been admitted to the hospital within a few days, and an apparent increase in frequency. This organism, in contrast to many of the new types of pneumococci, must occur rarely if ever as a saprophyte in the mouths of normal persons. In no case was it found except in association with definite pneumonia. Certain factors which appeared to be predisposing were in general similar to those found in other types of pneumonia. Predominant among these was infection of the upper respiratory tract, usually a common cold. This infection was present in thirty-four of the sixty-eight cases. There was a history of exposure in twenty, of trauma in two, of alcoholic stupor in three and of dietary deficiency in three. In three cases pneumonia was associated with pregnancy. In one case, in which pneumonia developed while the patient was in the ward, definite contact infection was evident. Only seven of the sixty-eight patients were women. The ages of the patients were scattered fairly evenly, except in the fourth decade, in which belonged twenty-four patients. The clinical course was characterized by an abrupt onset and a prolonged course, and in more than half the cases there was termination with crisis. Headache, vomiting and jaundice were common symptoms. There was a high incidence of bacteremia and anoxemia. Complications were frequent. In the cases in which serum treatment was given there was a lower mortality than in the cases in which serum treatment was not given. The difference was especially marked when treatment was given early. That group IV pneumonia is always a mild infection is contradicted by the present study.

Shock in Therapeutic Hyperpyrexia—Kopp and Solomon made a study of the severe reactions, considered as shock, that occurred in eight patients during hyperpyrexia induced by hot moist air. These patients were from 19 to 56 years of age. Death resulted in two of this group. The reactions occurred at temperatures of 106 F or above, the body temperature usually showing some further rise during the reaction. The impending shock was ushered in by a sudden increase in the pulse rate, pallor or cyanosis of the skin, a continued or rapid rise in the body temperature, fluttering of the eyelids, twitchings of the muscles of the face or extremities, vomiting or sudden quietness, suggesting coma in a patient who had previously complained bitterly of the heat. Readings of the blood pressure when obtained at this time showed low levels and in three patients the radial pulse was either weak or absent. The pulse rate at the onset was usually rapid. In one patient it increased from 130 to 180. In six patients these initial symptoms were followed by clonic or tonic convulsive movements of the jaw, extremities or trunk, and in five of the latter group the rigidity either localized or generalized, was so marked that it was difficult to differentiate it from the tonic

state of a convulsive seizure or muscular rigors due to heat cramps. In all patients considerable hyperactivity, jactitation and maniacal excitement occurred, and it was necessary to restrain them. This episode was either preceded or followed by coma or delirium or both. Clinical signs of pulmonary edema were present in three patients. The skin of each patient was hot and dry. Sodium amylal or morphine sulfate was administered to five patients of this group before or during fever therapy. Six patients survived the treatment, five recovered, completely in from one to forty-eight hours, with no residual changes or complaints. The sixth patient experienced a stormy convalescence of eight weeks. The mechanism of shock under the conditions of hyperpyrexia consists of a diminution in the blood volume, an increase in the vascular bed and an increase in the vascular permeability. A disturbed neurogenic mechanism, in addition to a disturbed hematogenic mechanism (dehydration), is also present. The presence of alkalosis and hypochloremia during artificial hyperpyrexia modify the clinical picture of the shock syndrome. Treatment should attempt to reduce the body temperature, increase the volume of blood, diminish the capillary permeability and compensate for the alkalosis and the loss of chlorides by (1) the evaporation of lukewarm water from the surface of the body, (2) intravenous infusions and (3) inhalations of carbon dioxide and oxygen.

Archives of Surgery, Chicago

35 621 832 (Oct.) 1937

- Incidence of Asymptomatic Pathologic Conditions of the Appendix Based on Study of 2,065 Consecutive Incidental Appendectomies H J Shelley New York—p 621
- Chronic Functional Lesions of the Shoulder A W Meyer, Stanford University Calif—p 646
- Influence of Laparotomy on Gastric Motor Mechanism of Man L E Barron New Haven Conn, G M Curtis and B Lauer, Columbus Ohio—p 675
- *Carcinoma of the Female Breast with Especial Consideration of Preoperative Irradiation Preliminary Report L C Cohn, Baltimore—p 694
- Gastric Surgery and Gastroscopy Differential Diagnosis of Benign and Malignant Lesions Operability of Tumors as Determined by Gastroscopy, Early Diagnosis of Gastric Carcinoma the Postoperative Stomach R Schindler and N Giere Chicago—p 712
- *True Branchiogenic Cyst and Fistula of the Neck H W Meyer New York—p 766
- Laxity of Radio Ulnar Joint Following Colles Fracture R K Lippmann New York—p 772
- Torsion of Pedicle in Ovarian Tumors P Bernstein New York—p 787
- A Review of Urologic Surgery A J Scholl Los Angeles F Hunn San Francisco A von Lichtenberg Budapest Hungary A B Hepler Seattle R Gutierrez New York G J Thompson J T Priestley Rochester Minn and V J O'Connor Chicago—p 795

Carcinoma of the Female Breast—There is no actual proof that preoperative irradiation followed by simple excision of the breast is not as good as preoperative irradiation followed by the complete operation, yet 44 per cent of the patients who had preoperative irradiation followed by the complete operation had demonstrable metastases in the axillary glands, and Cohn thinks that there should be no restriction of the complete operation because of preoperative irradiation. The surgeon will have only one opportunity to cure a patient with carcinoma of the breast. When a clinically benign tumor proves in a frozen section to be cancer or is suggestive of cancer, he has the choice of doing the complete operation at once or closing the wound giving preoperative irradiation and after the proper interval of time doing the complete operation. In the doubtful cases while the irradiation is going on the section can be submitted to other pathologists for their opinions. When the sections show cancer, even though all palpable evidence of disease was completely removed for biopsy, for the present anyway, the author feels that the complete operation should follow. The chances of curing a recurrent carcinoma of the breast are so small that he has about decided no longer to advise operation. Of the forty-one patients with recurrent carcinoma in his series only four are well, and the average length of time since the first operation was admitted to the clinic is only one year. Some of these recurrent carcinomas will be operable and present an apparently favorable prognosis, but the fact alone that they are recurrent almost excludes any possibility of a cure by surgical measures or by preoperative irradiation and surgical treatment. Perhaps even in this group it may be wise to treat by irradiation only.

True Branchiogenic Cyst and Fistula of the Neck—Meyer discusses the embryology of the branchial area and presents the case of a boy of 9 in whom after the removal of a branchiogenic cyst the tract was opened and found to be lined with normal appearing skin and to be firmly attached to the styloid process. Microscopically, as was shown by the photomicrographs, the wall of this tract contained all the appendages of the skin, as hair follicles, sweat glands and sebaceous glands, that is, the growth was a true branchiogenic cyst and tract originating from the second branchial arch. Complete removal of this brought about a cure of the condition.

Canadian Medical Association Journal, Montreal

37 311 414 (Oct.) 1937

- Rheumatic Fever and Heart Disease in Children H B Cushing Montreal—p 311
- Vagus Stimulation and Production of Myocardial Damage G W Manning G E Hall and F G Banting Toronto—p 314
- Diagnosis of Common Causes of Jaundice A M Snell Rochester, Minn—p 319
- Jaundice Surgical Considerations A T Bazin Montreal—p 328
- *Importance of Earlier Operation in Chronic Gallbladder Disease O W Niemeier, Hamilton Ont—p 332
- Endocrine Factors in Normal and Abnormal Menstruation M C Watson Toronto—p 337
- Fever Therapy E E Shepley Saskatoon Sask—p 341
- *Prevention and Treatment of Keratitis Neuroparalytica by Closure of Lacrimal Canaliculi J A MacMillan and W Cone Montreal—p 348
- Notes on Menopause E Shute London Ont—p 350
- Fractures of Forearm G W Armstrong Ottawa, Ont—p 358
- Anesthesia from the Patient's Point of View H R Griffith Montreal—p 361
- Sulfanilamide in Treatment of Gonorrhea H Orr Edmonton Alta—p 364
- Unusual Sequence of Events in Gastrojejunal Ulcer E P Scarlett and D S Macnab Calgary Alta—p 366
- Adrenal Cortical Hormone Method of Assay and of Preparation G Hunter and M M Cantor, Edmonton, Alta—p 368

Chronic Gallbladder Disease—In addition to operating on 143 patients himself, Niemeier studied 529 operations on the biliary tract performed at the Hamilton General Hospital. An estimation of the mortality rate in each ten year group, in these and several other series of cases, shows a progressive rise in each decade, undoubtedly due in part to advancing age and to the more advanced stage of the disease, as operative and pathologic observations suggest a long duration of the disease in these older patients. That many of the patients could have been operated on earlier with a lower mortality is indicated by the fact that in a number of them the history extended back over a long period of years. Ninety-nine patients, or 69 per cent, postponed operation until they were driven to it by unbearable pain or some acute emergency or serious complication. As most of the patients had been under the care of physicians from time to time, and the diagnosis of disease of the gallbladder had been made in the majority, it is apparent that the tendency of the patient to delay is but a reflection of the attitude of the physician toward chronic lesions of the gallbladder. Many physicians believe that chronic latent disease of the gallbladder is a harmless condition for which surgery is not indicated unless some acute manifestation or alarming complication develops. The prevalent policy of delay in the surgical treatment of chronic disease of the gallbladder also results in damage to adjacent organs such as the liver and pancreas. Hepatitis can frequently be seen in the gross and is often visibly more marked in the immediate vicinity of the gallbladder. Once destructive changes have occurred in adjacent organs, the patient, even after cholecystectomy, will be left with permanent damage. In addition to local effects of neglected chronic disease of the gallbladder, there are other insidious and more widespread effects. Many patients with apparently latent lesions pay the penalty of delay in the form of damage to distant organs. Literature has accumulated regarding the diseased gallbladder as an etiologic or aggravating factor in systemic disease. Statistical, pathologic and clinical evidence all emphasize the importance of earlier surgical treatment of chronic disease of the gallbladder. With modern diagnostic methods, earlier recognition of the condition should present little difficulty.

Treatment of Keratitis Neuroparalytica—MacMillan and Cone blocked the canaliculi, preventing the escape of tears into the lacrimal sac and drying, in one case with neuroparalytic keratitis. The corneal lesion healed promptly. The satisfac-

tory result following closure of the canaliculi has been maintained for five months. It is comparable to the results described by Beetham after he had closed the ducts in patients with filamentary keratitis. The canaliculus was slit with the actual cautery, it closed permanently, and therefore such a procedure would seem to be the one of choice. If the important factor in the development of corneal lesions is diminished secretion, it should be possible by detailed physiologic tests to select the cases in which this complication is apt to develop and to prevent it.

Delaware State Medical Journal, Wilmington

9 177 190 (Sept.) 1937

- Prevention of Hypertension E Weiss Philadelphia—p 177
- Hypertension and Cerebral Manifestations A Gordon Philadelphia—p 180

Florida Medical Association Journal, Jacksonville

24 191 246 (Oct.) 1937

- Appendicitis in Children D D Martin Tampa—p 203
- Veneral Diseases Can We Hope to Control and Possibly Eradicate Syphilis and Gonorrhea? H E Palmer Tallahassee—p 207
- *Unusual Clinical Manifestations of Some Brain Tumors L Y Dyrenforth Jacksonville—p 211
- Care of Surgical Patients W C Jones Miami—p 216
- Unusually Located Appendix W D Sugg Bradenton—p 219
- The Public Health Approach to Contraception Lydia Allen DeVilbiss, Miami—p 222

Unusual Manifestations of Some Brain Tumors—Dyrenforth discusses two clinical manifestations of cerebral tumors that are remote from the ordinary diagnostic procedures. The first of these is the definite neoplastic entity known as oligodendroglioma. The most important sign in these tumors is the presence of lime salts. Even in the earliest forms they tend to become cystic and promptly form calcareous deposits which are opaque to x-rays. This condition is of importance in the demonstration of such a tumor. The presence of characteristic opacities in roentgenograms of this brain tumor is significant enough for diagnosis, particularly since it is a cerebral type of growth. Other clinical changes must, of course, be considered: papilledema of low grade, xanthochromic cerebrospinal fluid, increased intracranial pressure and various neurologic signs. But while these are characteristic of numerous cerebral lesions, the x-ray demonstration of calcific deposits in a cystlike formation in the cerebrum, ordinarily unilateral, would be diagnostic of this particular tumor. In view of its operability this is considered an important item. The other manifestation offered for consideration is that of peptic ulcer. More specifically this is a lesion of the prepyloric area, but there is recognized a closely related neurogenic theory of origin. But this has to do with damage to the extranuclear vagus and sympathetic systems, whereas the idea proposed by the author is that of cerebral damage, specifically from neoplasm, and the resulting influence on the gastric secretion. To this group are related also the experimental results with pharmacologic methods, namely, injuring the base of the brain by injecting epinephrine into animals and causing overstimulation of the sympathetic system with the production of gastric and duodenal erosions. A parasympathetic center in the diencephalon or interbrain is suggested, from which fiber tracts pass backward and form a relay with the nucleus of the vagus nerve, among others, and thus therefore accounts for the influence on the alimentary canal of lesions in this area. Cushing finds that lesions anywhere along the course from the anterior hypothalamus to the vagal center may cause gastric lesions. The result may be from parasympathetic stimulation or from "vagal release" due to sympathetic paralysis. Since intracranial injuries and diseases of this portion of the brain are known to produce lesions of the gastric mucosa, he concludes that such conditions following certain of his cerebellar operations are of identical nature. Cushing goes on to say that this evidence of involvement of the medullary center or a minor involvement of the interbrain may well explain the presence of a long overloaded station for vegetative impulses easily affected by psychic influences—that highly strung persons of nervous

instability classified as vagotonic are prone to have chronic digestive disturbances with hyperacidity often leading to ulcer. The fact is stressed that cerebral tumors are frequently the cause of this condition whether directly, by mechanical influences or indirectly, by reason of surgical influences.

Illinois Medical Journal, Chicago

72 285 376 (Oct.) 1937

- Modern Problems in Control of Streptococcal Diseases J H Bailey, Chicago—p 301
- Lessons Learned from a Blind School Survey R J Masters, Indianapolis—p 309
- *Some Dangers of Rapid Diuresis M H Barker, Chicago—p 313
- Metaphen Intravenously in Treatment of Tularemia F L Barthelme, Effingham—p 317
- Radium Therapy of Cancer of Oral Cavity H E Davis, Chicago—p 320
- Scarlet Fever and Its Complications Statistical Study of 783 Cases of Scarlet Fever in School Children One Year After an Epidemic E H Quandt Rockford—p 323
- Some Roentgen Considerations of the Childhood Type of Tuberculosis E E Barth Chicago—p 328
- Three Interesting Intra Ocular Tumors (Malignant Melanomas) M L Ostrom, Rock Island—p 331
- The Acute Nasal Infection Local Therapy Based on Modern Conception of Nasal Physiology O E Van Alyea Chicago—p 336
- Vaginal Septum Double Cervix and Bicornate Uterus Report of Six Cases of Maldevelopment of the Birth Canal C E Galloway Evanston—p 341
- Whole Suprarenal Gland A Useful Therapeutic Agent O Barbour Peoria—p 343
- New Method of Stabilizing Weak Joints L W Schultz, Chicago—p 350
- Oxygen Content of Blood During the New Treatments for Schizophrenia Preliminary Report J Steinfeld and L Gerber, Peoria—p 351
- Injuries of Semilunar Cartilages R M Carter, Green Bay Wis—p 354
- Treatment of Hypertension with Especial Reference to Newer Knowledge of Causes of Hypertension S K Robinson Chicago—p 357
- Narcolepsy Attacks of Irresistible Sleep R L Gorrell, Clarion, Iowa—p 368

Dangers of Rapid Diuresis—Barker points out that, with the improvement of diuretic management, edema as such is much more readily controlled and one is too frequently tempted to watch the volume of urine or weight drop without sufficient regard to the concentration of the waste products that may be less easily eliminated. Edema is only a symptom and the fundamental problem must not be slighted. The volume of fluid in the edematous patient is frequently much larger than one's greatest estimate. This fluid must be cleared through the kidneys and often either the long standing passive congestion or actual renal vascular disease or both alter greatly their ability to clear minerals and waste products of protein metabolism. Nature's dilution of retained materials is often a most important physiologic safeguard. The reverse of the process therefore becomes a most important matter to such patients unless careful observation is maintained. The great benefits derived from a physiologic diuresis cannot be emphasized too greatly. The fact that drugs usually are quite evenly distributed through the fluids of the body makes diuresis an element of danger in some cases. This is true of digitalis. One must be alert to the urgent need for the control of diuresis by an active antidiuretic plan.

Johns Hopkins Hospital Bulletin, Baltimore

61 221 294 (Oct.) 1937

- Problems in Active and Passive Immunity T Madsen, C Jensen and J Ipsen Copenhagen Denmark—p 221
- Extensive Injury to Cerebral Cortex Following Nitrous Oxide Ether Anesthesia Case F R Ford F B Walsh and J A Jarvis, Baltimore—p 246
- *Observations on Development of Intrathoracic Calcification in Tuberculin Positive Infants Miriam Brailey Baltimore—p 258
- Protective Action of Sulfanilamide and Antimentingococcus Serum on Meningococcal Infection of Mice T M Brown Baltimore—p 272
- Peculiar Case of Encephalitis and Myositis Ella Hutzler Oppenheimer Baltimore—p 280

Intrathoracic Calcification in Tuberculin-Positive Infants—Brailey obtained the 158 cases for her study from the patients admitted to the special clinic for childhood tuberculosis of Johns Hopkins Hospital between Nov. 1, 1928, and Nov. 1, 1933, all of whom at time of entry into this study (1) were less than 2 years of age, (2) were tuberculin positive, (3) showed on x-ray examination no evidence of calcification and (4) have since been followed with serial roentgenograms for periods ranging from less than one to more than five years. Calcification appeared in the chest in about 17 per cent of children observed one year after the discovery of tuberculous infection. This proportion rose to 47 per cent by the end of two years, to 62 per cent by the end of three years and to 66 per cent by the end of four years. White and Negro children

developed calcification at equal rates, but the Negro children had unhealed lesions associated with first calcification in 55 per cent of the ninety-eight cases and the white children in 30 per cent of the sixty-five cases. The proportion of cases in which calcification appeared varied with the extent of the lesion. Within a period of four years it was observed in 86 per cent of children who had shown parenchymal lesions, in 67 per cent of those who had shown definite involvement of the tracheobronchial node without parenchymal lesions, and in 36 per cent of those in whom no definite lesion had ever been recorded. In 90 per cent of the cases calcification appeared first in the tracheobronchial lymph nodes. Associated calcifying pulmonary nodules were observed simultaneously in about one third of these cases, and in another third pulmonary nodules appeared later. About one fifth of the cases in which calcification developed had shown no definite lesion in earlier x-ray studies. In the remaining four fifths, calcification usually took place on the side of the thorax at which the active lesion had been noted, but in 9 per cent it appeared only on the opposite side, where no lesion had been seen. Serial roentgenograms demonstrate that small deposits of calcium may become indistinguishable with time, owing to changes in the calcified mass or to its becoming hidden by mediastinal structures. An instance is cited of the absorption and disappearance of a calcified parenchymal nodule within four years of its first appearance. Of forty-six patients in whom calcification had been noted more than two years previously, tested recently with old tuberculin with the possible exception of one patient failing to react to 0.01 mg and not retested, no instance of loss of allergy has been found.

Journal of Bacteriology, Baltimore

34 243 352 (Sept.) 1937

- Fibrinolytic Anticoagulating and Plasma Clotting Properties of Staphylococci E Neter, Buffalo—p 243
- Independent Variation of Several Characteristics in *Serratia Marcescens* G B Reed Kingston Ont—p 255
- New Method for Evaluation of Germicidal Substances A J Sallé W A McOmie and I L Sheecheester Berkeley, Calif—p 267
- Study of Meningococci Recovered in the United States Since 1930 Sara E Branham and Sadie A Carlin Washington D C—p 275
- Relationships Between Staphylococci and Bacilli Belonging to Subtilis Group as Shown by Bacteriophage Absorption M L Rakieten and T L Rakieten Brooklyn—p 285
- Antibiosis in Colon Typhoid Group I Growth Curves of Two Strains in Synthetic Medium M Fulton Providence R I—p 301
- Chromium Sulfuric Acid Method for Anaerobic Cultures L Rosenthal Brooklyn—p 317
- Studies on Anaerobic Bacteria XI Properties of the H Agglutinogens of Mesophilic and Thermophilic Species Elizabeth McCoy Madison, Wis—p 321
- Leeuwenhoek's Method of Seeing Bacteria. B Cohen Baltimore—p 343

Journal of Immunology, Baltimore

33 173 250 (Sept.) 1937

- Antitoxic Titers of Human Subjects Following Immunization with Combined Diphtheria and Tetanus Toxoids Alum Precipitated F G Jones and J M Moss Indianapolis—p 173
- *Studies on Tetanus Toxoid II Response of Human Subjects to an Injection of Tetanus Toxoid or Tetanus Alum Precipitated Toxoid One Year After Immunization F G Jones and J M Moss Indianapolis—p 183
- Investigation of the League of Nations Standard Requirements for Schick Toxin E M Taylor and P J Moloney Toronto—p 191
- Inactivation of Tetanus Toxin by Crystalline Vitamin C (Ascorbic Acid) C W Jungelut New York—p 203
- Studies in Experimental Hypersensitiveness in Rhesus Monkey III Manner of Development of Hypersensitiveness in Contact Dermatitis H W Straus and A F Coca Brooklyn—p 215
- Serologic Behavior of Heated Protein Mixtures Clara Nigg New York—p 229
- Complement Fixation Reaction in Experimental Equine Encephalomyelitis Lymphocytic Choriomeningitis and the St Louis Type of Encephalitis Beatrice F Howitt San Francisco—p 235

Response to Tetanus Toxoid One Year After Immunization—Jones and Moss tested the blood specimens of forty-one subjects for antitoxic content six months and twelve months after injections of tetanus toxoid. There was a noticeable drop in titer after six months and twelve months in the two groups that received three injections (0.1, 0.2 and 0.2 cc) and two injections (0.2 and 0.3 cc.) of alum toxoid respectively, while the titer of the group that received three injections (0.5, 1 and 1 cc.) of untreated toxoid remained fairly constant. Apparently while alum precipitated toxoid produced a greater and more rapid immunity, the immunity dropped over an extended period.

to the level stimulated by untreated toxoid. A subsequent dose of tetanus toxoid or tetanus alum precipitated toxoid one year after primary injection increased the antitoxic content of the blood from twenty to fifty times, making a level which is higher and more persistent than that produced by a prophylactic injection of tetanus antitoxin.

Journal Industrial Hygiene & Toxicology, Baltimore

19 349-468 (Oct.) 1937

- Halogenated Hydrocarbons Their Toxicity and Potential Dangers W F von Oettingen Wilmington, Del.—p 349
Cancer of Human Lung and Animal Experiment J A Campbell Hampstead London England—p 449
Solubility of Quartz in Hydrofluoric Acid W B Harris, Boston—p 463

Journal of Lab and Clinical Medicine, St Louis

23 1 106 (Oct.) 1937

- Comparative Effects of New Insulin Preparations on Blood Sugar Curve Results with Protamine Protamine Zinc Protamine Calcium Crystal line and Regular Insulin G B Myers and F S Perkin Detroit—p 1
Guandine like Substances in the Blood III Blood Guanidine in Normal Pregnancy Toxemias of Pregnancy and Cirrhosis of the Liver J E Andes, Erlene J Andes Morgantown W Va and V C Myers Cleveland—p 9
*Calcium Tolerance Curves in Paget's Disease of the Bone Isabel M London and Alice R Bernheim New York—p 18
Absorption Spectrums of Direct and Indirect Reacting Types of Serum Bilirubin G E Davis and C Sheard Rochester Minn—p 22
Anaphylaxis in Decerebrated Monkeys L M Davidoff N Kopeloff and Lenore M Kopeloff New York—p 30
Blood Studies on Normal and Trichinized White Rabbits W W Wantland Evanston Ill—p 32
Multiple Serositis Kelly Pericarditic Pseudocirrhosis of Liver Pick T L Ramsey Toledo Ohio—p 39
*Iron Metabolism in Hemochromatosis W M Fowler and Adelaide P Barer Iowa City—p 47
Weltmann Serum Coagulation Reaction Preliminary Report S A Levinson R I Klein and P Rosenhalm, Chicago—p 53
*Skin Prints Simple Technique for Following Individual Lesions in Chronic Skin Disease Such as Psoriasis J Krafka Jr, Augusta Ga—p 72
Comparison of Series of Wassermann and Kline Tests with Respect to Specificity and Sensitivity R G Stillman New York—p 73
Easily Constructed Respiratory Valve R H K Foster, Nutley, N J—p 79
Measurement of Fluorescence Intensity by Photo Electric Means D S Stevens and W J Turner Chicago—p 81
Biologic Assay of Estrogenic Substances Evangeline F Deckert Elizabeth Mulhall and Carol Swiney Jersey City, N J—p 85
Pseudo-Agglutination of Erythrocytes by Alkali R D Barnard, Chicago—p 98

Calcium Tolerance Curves in Paget's Disease of Bone—London and Bernheim performed 201 calcium tolerance tests on 146 persons, including seventeen patients with untreated Paget's disease of the bone and twenty-two normal subjects. Subjects were instructed to come to the hospital fasting and were given a little chocolate to eat in order to avoid unpleasant reactions, which are likely to follow the intravenous administration of calcium to a fasting subject. From five to ten minutes afterward an initial blood specimen was withdrawn and a uniform test dose of 10 cc of 20 per cent calcium gluconate solution (0.186 Gm of calcium) was injected slowly, during four to five minutes. First and second specimens were withdrawn fifteen minutes and two hours after the injection for analysis. It appears that the calcium curve of Paget's disease is notable for an absence of marked deviation from the pre-injection level. The curve obtained in Paget's disease, in view of its tendency to resist marked upward deviation, would appear to indicate an increased affinity for calcium on the part of the bones and other tissues or a decreased affinity for calcium on the part of the blood. The former interpretation is in line with the metabolic studies reported by several investigators, showing a retention of calcium by the body in Paget's disease of the bone. In five cases of Paget's disease an almost flat curve was obtained. This was not obtained in any of the normal subjects.

Iron Metabolism in Hemochromatosis—Fowler and Barer carried out iron-balance studies on four patients who presented the characteristic features of hemochromatosis and as a control similar studies were performed on two patients with uncomplicated diabetes mellitus whose diabetes was of approximately the same severity as that in the patients with hemochromatosis. Three patients with advanced stages of

hemochromatosis retained no more iron than did two patients with diabetes mellitus. This was true not only when the iron was obtained from the food alone but also when an additional 340 mg of iron was given in the form of iron and ammonium citrate. This shows that in the late stages of hemochromatosis there is no abnormal retention of iron. The results obtained in the other case are more difficult to interpret, since the studies were of short duration. For the single period of observation an unusually large retention of iron occurred, distinctly greater than that in other cases of hemochromatosis or control subjects. It is obvious from the results of tissue analysis that retention of unusually large amounts of iron must occur at some time in the development of hemochromatosis. The clinical recognition of the disease is difficult or impossible in the early stages before evidence of pigmentation, cirrhosis of the liver and diabetes make their appearance, so that iron-balance studies will be difficult to obtain at that time. The authors encountered one patient in a relatively early stage who had entered the hospital because of an unrelated condition. He presented moderate pigmentation of the skin, slight enlargement of the liver and no glycosuria but a diminished tolerance to dextrose. The results from this patient cannot be considered as conclusive but suggest that iron is retained in excessive amounts in the early stage, although this abnormal retention does not persist in the fully developed case.

Journal-Lancet, Minneapolis

57 435-474 (Oct.) 1937

- Discussion of Protamine Insulin R O Gochl, Grand Forks N D—p 435
Anesthesia and Relief of Pain by the General Practitioner J S Lundy and E B Tuohy Rochester, Minn—p 438
The General Symptomatology of Common Rectal and Anal Diseases J K Anderson Minneapolis—p 441
Feeding Problems in Infancy G E Robertson Omaha—p 444
Treatment of Burns W A Wright, Williston N D—p 449
The Results of Routine Examination of Candidates for Teacher's Certificate at the University of Wisconsin L R Cole Madison Wis—p 451
Brucellosis N M Levine, J A Myers Minneapolis and Elizabeth A Leggett Kent Ohio—p 453
Some Allergic Problems Puzzling to the General Physician J A Rudolph, Cleveland—p 457
Vitamins and Infections of the Eye Nose Throat and Sinuses G M Koepcke Minneapolis—p 460

Journal of Nutrition, Philadelphia

14 329-434 (Oct.) 1937

- Effect of Quality of Protein on Estrous Cycle P B Pearson, E B Hart and G Bohstedt Madison, Wis—p 329
Studies on Energy Metabolism of the Hen H H Dukes, Ithaca N Y—p 341
*Effect of Yeast on Liver Glycogen of White Rats During Hyperthyroidism V A Drill Brooklyn—p 355
Effect of Adding Copper to Exclusive Milk Diet Used in Preparation of Anemic Rats on Their Subsequent Response to Iron Margaret Cammack Smith and Louise Otis Tucson Ariz—p 365
Identity of the Goldberger and Underhill Types of Canine Blacktongue Secondary Fusospirochetal Infection in Each D T Smith E L Persons and H I Harvey Durham N C—p 373
Immaturity of Organism as Factor Determining Favorable Influence of Lactose on Utilization of Calcium and Phosphorus R B French and G R Cowgill New Haven Conn—p 383
Toxicity of High Glutadin Diets Studies on the Dog and on the Rat D Melnick and G R Cowgill New Haven Conn—p 401
Effects of Deficiency of Phosphorus on Utilization of Food Energy and Protein E B Forbes State College Pa—p 419

Effect of Yeast on Liver Glycogen During Hyperthyroidism—Drill studied the change that occurred in the percentage of liver glycogen in hyperthyroid rats, if any, when small amounts of thyroxine were injected daily over a longer period than six days as used by Abelin, Knochel and Spichtin. Yeast, in which vitamins B and G are known, was fed in order to produce a constant weight, or a gain in weight, in rats receiving thyroxine and the liver of these rats was then analyzed for the percentage of glycogen and compared with control rats. A group of rats on a normal daily diet containing from 21 to 24 U S P units of vitamin B (B₁) and from 24 to 26 Sherman units of vitamin G gained in weight and showed normal values of liver glycogen. A group of rats on the same normal diet receiving daily 0.1 mg of thyroxine subcutaneously lost weight eventually and showed low values for liver glycogen. A group of rats on a normal daily diet containing 54 U S P units of vitamin B and 60 Sherman units of vitamin G and receiving 0.1 mg of thyroxine subcutaneously

still gained or remained constant in weight and showed normal values for liver glycogen. The change in the vitamin content of the diet of the test rats, as regulated by the amount of yeast, is responsible for the normal value of liver glycogen.

Medical Annals of District of Columbia, Washington

6 259 284 (Sept.) 1937

- Physiologic Response to Massive Infusions of Physiologic Salt Solution R A Cutting A M Lands and P S Larson Washington—p 259
Renal Tuberculosis R M LeComte Washington—p 263
Subcortical Prefrontal Lobotomy in Treatment of Certain Psychoses W Freeman and J W Watts Washington—p 267
Paraldehyde Benzyl Alcohol Obstetric Analgesia by Kane Roth Method H P Parker, Washington—p 272
Probable Bacterial Endocarditis Apparently Cured with Sulfanilamide Report of Case H H Hussey Washington—p 275
Learning Disability in Intelligent Children Symptom of Emotional Disturbance Agnes B Greig Washington—p 276

Military Surgeon, Washington, D C

81 241 320 (Oct.) 1937

- Possibilities for Pneumonia Control as Indicated by Present Scientific Knowledge R Cole—p 241
Organization of a Laboratory Research Unit U S N R A P Krueger—p 255
The Present Status of Artificial Fever Therapy in Medicomilitary Practice E H Parsons J J White R M Hardaway and Alice Barnes—p 258
Bullet in the Brain Report of Case G L Johnson—p 264
History of an Ex Service Man Overcoming Great Physical Handicaps and Still Carrying On C D Ryan—p 268
Vitamin Hysteria F J Vokoun—p 270
Residuals of Gunshot Wounds C E Buswell—p 271
Meniere's Syndrome Review of Ten Cases M M Kafka—p 273
Fatal Result of Artificial Fever Therapy Case Report G D Chunn and C L Kirkpatrick—p 281
Investigation into Abdominal Complaints of Veterans of the World War J W Rock—p 287

Minnesota Medicine, St Paul

20 627 690 (Oct.) 1937

- Hypertensive Heart Disease Its Clinical Pathologic Manifestations F D Murphy R M Woods and J Grill, Milwaukee—p 627
Health Problems from the Layman's Point of View C R Rorem Chicago—p 642
Visual Impairment Due to Neglect F E Burch St Paul—p 646
*Protein Deficiency Edema S Boyer Jr Duluth—p 653
Serum Treatment of Pneumococcal Lobar Pneumonia C N Hensel, St Paul—p 658
Use of the Gastroscope A C Kerhbf Minneapolis—p 666
External Use of Aloes J E Crewe Rochester—p 670

Protein Deficiency Edema—Edema may not only be cardiac or renal but also mechanical or obstructive, inflammatory, allergic and nutritive. It is the edema caused by a reduction in the colloid osmotic pressure and in particular that termed nutritional edema, protein deficiency edema, that Boyer discusses. Of the two types of protein having a part in the production of protein deficiency edema, albumin and globulin the former is of the greater importance. Serum albumin is of greater importance because it exerts an osmotic pressure four times that of the serum globulin. Although for many years the level of serum proteins was definitely associated with the appearance of edema, it has not been until more recent years that this has been recognized in cases other than the so called nutritional edema. The treatment of protein deficiency edema consists primarily in the administration of protein in large quantities. However, water without salt cannot be retained. In many cases when the serum proteins are at the borderline, that is, when they are at or slightly above the critical level, edema will appear. In these cases the simple restriction of salt from the diet will result in the disappearance of edema. Therefore in treating this type of edema it would appear best to give not only high protein diets but also a salt free or salt low diet with restriction of fluids. The amount of protein given daily should be from 100 to 150 Gm. Animal protein will secure more rapid and satisfactory results and the control of salt and water intake with rest in bed is advisable. It is possible to compute the amount of protein necessary by giving 1 Gm of protein per kilogram of body weight plus that which is lost in the urine if that is the route of protein deprivation. Blood transfusions and the intravenous administration of acacia dextrose are to be resorted to when nothing can be taken orally. The use of mercurial diuretics is questionable and cer-

tainly one should defer their use if there is the slightest question of existent renal damage. Ammonium chloride and other salts may be used in an attempt to upset the electrolytic concentration and thus produce diuresis. Edema is a symptom and sign, not a disease, to be interpreted as part of a disease process with the treatment incorporated in that of the original disease.

New England Journal of Medicine, Boston

217 579 610 (Oct 7) 1937

- Ether versus Chloroform H E Hoff New Haven Conn—p 579
Effect of Amniotin and Antitruin S in Diabetes Insipidus H Blotner Boston—p 592
Malignant Tumor of Ovary Occurring in a Thirteen Year Old Girl A A Levi Boston—p 595

Public Health Reports, Washington, D C

52 1369 1402 (Oct 1) 1937

- Further Field Studies on Selenium Problem in Relation to Public Health M I Smith and B B Westfall—p 1375
How Expenditures for Selected Public Health Services Are Apportioned J W Mountin—p 1384

Rhode Island Medical Journal, Providence

20 155 168 (Oct.) 1937

- Discussion of Certain Aspects of Diagnosis and Treatment of Trigeminal Neuralgia and Meniere's Syndrome G Horrax Boston—p 155
*Primary Pneumococcus Meningitis C A McDonald and M Korb Providence—p 158
Graceful Old Age C F Gormly Providence—p 160

Primary Pneumococcal Meningitis—McDonald and Korb report four cases of primary pneumococcal meningitis. In every case lumbar puncture showed intracellular pneumococci in the spinal fluid. In no case did routine examination reveal evidence of a primary pneumococcal infection in the ear, the chest or any part of the body, to which the meningitis might be secondary. The onset was insidious. Nerve signs developed rapidly. Violent motor display was quite characteristic. Death came not later than the third day with respiratory failure. The average duration of the course of the disease was less than three days.

Surgery, St Louis

2 493 652 (Oct.) 1937

- Os Calcis Fractures an Improved Treatment O W Yoerg Minneapolis—p 493
Treatment of Peripheral Vascular Disease by Suction Pressure Chamber Applied to the Thigh E Holman and T L Schulte San Francisco—p 502
Therapy of Surgical Complications of Diabetes Mellitus at Presbyterian Hospital in New York City 1930 1935 B C Smith New York—p 509
Effect of Complete Intestinal Fistula on Blood Potassium J Scudder and R L Zwemer New York—p 519
*Technic of Appendectomy, with Particular Reference to Treatment of Appendical Stump A Ochsner New Orleans and G Lilly Miami Fla—p 532
Arteriovenous Fistula Involving the Common Carotid Artery and Internal Jugular Vein I A Bigger and K M Lippert Richmond Va—p 555
*Probable Cause for High Mortality Following Cholecystostomy, Cholecystogastrostomy and Cholecystoduodenostomy in Jaundiced Patients R R Best and N F Hicken Omaha—p 566
Chronic Nonspecific Ulcerative Colitis Review of 138 Cases C W Monroe Oak Park Ill—p 575
Operative Treatment of Pilonidal Sinus with Especial Reference to Type of Suture Material as Factor in Recurrence J E Dunphy Boston—p 581
Evaluation of Sterility Indicators C W Walter Boston—p 585
Intravenous Administration of Fluids Including Blood Transfusion J S Lundy and A E Osterberg Rochester Minn—p 590
Diverticulum of the Larynx H H Kerr and T Bradley, Washington D C—p 598
Irradiation Sarcoma H Wilson and A Brunschwig Chicago—p 607
Gravity Pressure and Circulating Hot Water Method of Applying Heat to Pelvic Tissues P A Champion New Orleans and C A Dwyer Jr, Houston Texas—p 612

Technic of Appendectomy—Ochsner and Lilly declare that the inversion without ligation technic is the ideal appendectomy procedure provided the stump can be inverted without contamination of the peritoneal cavity and that hemostasis can be secured. In the technic that they describe, this is accomplished by applying three crushing forceps to the appendical stump and by grasping the crushed sealed stump before the last forceps is removed prior to inversion. Hemostasis is secured by introducing a purse-string suture in such a way that an intramural branch of the appendicular artery is grasped.

in the suture. Because the crushed stump is inverted into the lumen of the cecum, there is no danger of subsequent inflammation occurring around this stump and extending to the cecal wall or peritoneal cavity.

Jaundiced Patients—Best and Hicken believe that it is dangerous to accept the recognized criteria for a patent cystic duct in those jaundice cases which are associated with a malignant condition of the head of the pancreas or the lower end of the common duct. If one cannot definitely insert a probe through the cystic duct and into the common duct, there are two alternatives: either an immediate cholangiogram can be made to determine the exact status of the cystic duct, or the common duct can be directly attacked either by choledochostomy or choledochoduodenostomy. If the cholangiogram proves the cystic duct to be obstructed, the latter procedure is indicated. If a probe cannot be directed through the cystic duct, immediate cholangiography is not indicated in most instances but an attack should be made on the common duct for biliary decompression. Three cases are reported in which biliary decompression was not accomplished because of obstruction of the cystic duct and the patients died because of the extra load of operation. These cases also demonstrate the unreliability of a patent cystic duct unless a probe can be inserted through the duct. Although drainage of the common duct and duodenal anastomosis of the common duct are technically more difficult than utilization of the gallbladder, the mortality rate is decidedly lower. Reestablishing the flow of bile from the liver to the gastrointestinal tract becomes a vital necessity when the intrinsic or extrinsic obstruction that is blocking the lower end of the common duct cannot be removed. Many times a two stage procedure is necessary: short circuiting or drainage to relieve the jaundice and improve the general condition of the patient, and the removal of the obstructive agent.

Virginia Medical Monthly, Richmond

64 365 428 (Oct.) 1937

- Principles Guiding Treatment of Generalized Edema F H Smith, Abingdon—p 365
Discussion of Serious Medical Complications During Pregnancy J Bear Richmond—p 372
*Use of Autohemotherapy in Treatment of Psoriasis and Herpes Zoster Preliminary Report E E Barksdale Danville—p 378
The Problems of Early Syphilis O L Anderson Richmond—p 381
Treatment of Neurovegetative Dystonia A H Moore, Doylestown Pa—p 386
Treatment of Severe Pain R M Hoover Roanoke—p 390
Alternative Solutions Proposed for Medico Economic Problems W B Porter Richmond—p 392

Autohemotherapy in Treatment of Psoriasis and Herpes Zoster—The method that Barksdale employed in treating two cases of psoriasis and seven of herpes zoster entailed the removal of 6 or 8 cc of blood from the cubital vein and injecting it immediately into the gluteal muscle before it had time to clot. The two cases of psoriasis responded well to a routine consisting of autohemotherapy, anthralin ointment locally and a diet rich in milk and butter. Autohemotherapy not only shortens the duration of pain of herpes zoster but also shortens the course of the disease. It is as good as any other form of therapy that has been used in the past, if not a specific in the treatment of herpes zoster. The majority of patients gave a history of the absence of milk or butter from their diet. Patients with psoriasis were advised to partake of a diet rich in milk and butter, supplemented by carotene in oil or cod liver oil, the local application of anthralin ointment, which is a chrysarobin derivative, ultraviolet radiation and autohemotherapy.

Western J Surg, Obst & Gynecology, Portland, Ore

45 527 580 (Oct.) 1937

- Low Back Pain with Especial Reference to Dislocation of Intervertebral Disk and Hypertrophy of Ligamentum Flavum H A Brown San Francisco—p 527
Extraperitoneal Cesarean Section Using the Latzko Method A Bernstein and L I Breinstein San Francisco—p 532
Evaluation of Physiotherapeutic Modalities in Jaw and Associated Fractures H H Weisengreen Fresno Calif—p 537
Basic Factors Involved in Proposed Electrical Methods for Measuring Thyroid Function III Phase Angle and Impedance of Skin A Barnett New York—p 540
Malignancy of Thyroid C W Mayo Rochester Minn—p 545
Production of Increase in Metabolic Rates of Thyroidectomized Rabbits by Certain Situational Extracts D K O'Donovan and J B Collip Montreal—p 564

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Radiology, London

10 637 700 (Sept.) 1937

- Radiologic Aspect of Bronchiectasis in Children C G Teall—p 637
Radiating Surfaces Study on Introduction of New Method in Gamma Ray Treatment Part I J van Rooijen—p 650
Eventration of Diaphragm A C Singleton—p 677
Factors Determining Detection of Shadows in Radiographs A E Barclay and K J Franklin—p 689

British Medical Journal, London

2 605 642 (Sept 25) 1937

- Wider Issues of Health Legislation in Industry L P Lockhart—p 605
Id R E Lane—p 608
Id E Bevin—p 610
Use of Adult Serum in Measles: An Account of an Epidemic in a Public School K Le Fleming—p 612
Value of Continuous Negative Pressure in Surgery M J Bennett Jones—p 613
Benzedrine: Review of Its Toxic Effects with Report of Severe Case of Anemia Following Its Use I J Davies—p 615
*Pernicious Anemia with Diabetes Mellitus H G McGregor—p 617

Pernicious Anemia with Diabetes Mellitus—McGregor presents two cases of pernicious anemia in association with diabetes mellitus. There are certain conditions common to the two which might predispose to their simultaneous occurrence. A point about which there is no clarity is whether the diabetes should be considered as a complication of the anemia or vice versa. In case 1 the pernicious anemia was known to have preceded the diabetes, in case 2 it was probably the reverse, and in the majority of reported cases it was the diabetes that developed first. Figures as to the frequency of the association of the two diseases are suggestive of something more than chance, but they are no more than suggestive. Though achlorhydria, longer duration of life because of improved treatment, the factor of middle age and hereditary tendencies are factors common to the two diseases, especially when diabetes is the primary condition, there still remain cases in which pernicious anemia was the first to develop. In the latter circumstance certain changes in carbohydrate metabolism that are known to occur in anemia seem more likely to be the agents which lead to the two diseases. Evidence is contradictory and no adequate explanation has been offered regarding the mechanism of production of high blood sugar and abnormal sugar tolerance in pernicious anemia or the occasional occurrence of pernicious anemia complicating diabetes. Most authors consider that the phenomenon is a chance combination.

2 643 688 (Oct 2) 1937

- Conservative Treatment of Cancer of the Breast G Keynes—p 643
Tumors of Bone: Responsibilities of the Pathologist J S Young—p 647
*Thoracoplasty with Extrafascial Apicolysis C Semb—p 650
Cerebral Edema in Certain Mental Disorders C Lovell—p 656
*Nonsuppurative Intraaural Complications of Otitis Media A A McConnell—p 659

Thoracoplasty with Extrafascial Apicolysis—Semb maintains that to produce a free mobilization of the upper lobe in selective collapse the thoracoplasty should generally be combined with apicolysis. His method of apicolysis is characterized by three chief points: (1) apicolysis in the extrafascial plane by cutting the so called suspension bands of the lung sharply or bluntly, (2) a radical rib resection according to the extent of the apicolysis and (3) preparation of an extrafascial space by cutting the periosteum of the ribs and the other tissues in such a manner that they are not loosened from the surface of the lung. This extrafascial type of apicolysis gives both relaxation and subsequent fixation of the collapsed part of the lung. His follow-up examinations have shown that the cavity closes gradually by retraction in the course of weeks or months following operation. An extensive local block anesthesia—with 0.5 per cent procaine hydrochloride and 1:2,000 pontocaine hydrochloride—has been used successfully. In the first stage from three to five upper ribs are resected, usually the whole of the first, most of the second, and decreasing lengths of the third and fourth ribs. The apicolysis is carried out as an open dissection. The intercostal bundles, nerves, vessels and the periosteum of the upper ribs are cut. The adhesions or bands between the apex of the lung and the neurovascular trunk, the

vertebrae and the mediastinum are dissected free and severed. The intercostal bundles are usually excised, as they are liable to necrosis. The resection of the subjacent ribs is usually performed in one or more later stages. Simultaneously parts of the anterior stumps of the previously resected upper ribs are usually resected. The best time for the second stage is within four weeks. Later the regenerated ribs are resected, and sometimes two or three transverse processes. The extent of the operation in each case should be in accordance with the localization of the cavitation, so that the collapse becomes as effective—and at the same time as limited to the diseased part of the lung—as possible. An exact roentgenographic localization of the cavity in two planes is therefore necessary. The usual first stage varies between resection of three to five ribs and apicolysis from a posterior incision. The first stage may be performed as a resection of the anterior parts of the first and second ribs only. The apicolysis is then performed from behind in the second stage. The mortality rate within two months of operation has been reduced to about 3 per cent by operation in several stages. Collapse of the cavity and a sputum free from tubercle bacilli have been achieved in about 90 per cent of the surviving patients. Of all the cases 90 per cent had partial thoracoplasty with resection of eight ribs or less. Only 10 per cent required total thoracoplasty. In seventeen cases artificial pneumothorax had been induced on the other side and was present during the thoracoplasty. These patients tolerated the operation surprisingly well, probably because of a stabilized mediastinum. There were no deaths. In fourteen of the seventeen cases complete collapse of the cavity and a sputum free from tubercle bacilli was achieved. In four cases artificial pneumothorax on the other side was induced after the thoracoplasty. The operation has also been tried after thoracoplasty performed previously by other methods has failed to produce complete collapse. Complete collapse of the cavity was achieved in fourteen of sixteen patients who were operated on a second time in this way.

Nonsuppurative Complications of Otitis Media—McConnell classifies intracranial complications of otitis media as suppurative and nonsuppurative. Nonsuppurative complications are of two kinds, one an encephalic lesion which gives rise to both focal and general symptoms and the other a derangement of the amount or of the circulation of the cerebrospinal fluid, resulting in the accumulation of the fluid and a rise in the general intracranial pressure. When symptoms and signs of increased intracranial pressure develop in the course of otitis media and clinical methods fail to establish a definite diagnosis, ventricular puncture is safer and more informative than lumbar puncture and should be used first. If a communicating hydrocephalus is found, lumbar puncture may then be used for treatment.

East African Medical Journal, Nairobi

14 187 218 (Sept.) 1937

- Headache in Kenya H L Gordon—p 189
Enquiry into Diet and Nutrition Among Indian School Children in Kampala with Especial Reference to Consumption of Milk R E Barrett—p 199
Prontosil in Appendicitis J Dundas—p 208

Journal of Hygiene, London

37 489 616 (Oct.) 1937

- Studies in Declining Birth Rate England and Wales I The Northern Counties II Summary of Results for All Areas W J Martin—p 489
Antigenic Structure of Influenza Viruses Preparation of Elementary Body Suspensions and Nature of Complement Fixing Antigen L Hoyle and R W Fairbrother—p 512
Filtration and Centrifugation of Viruses of Rabbit Fibroma and Rabbit Papilloma M Schlesinger and C H Andrewes—p 521
*Growth of Streptococcus Pyogenes in Milk Stored at Atmospheric Temperatures E J Pullinger and Audrey E Kemp—p 527
Sterilization of T A B C Vaccine S G Rainsford—p 539
Simple Tellurite Chocolate-Agar Medium for Typing and Isolation of *Corynebacterium Diphtheriae* G A W Neill—p 552
Variation of Specific Phase of *Salmonella Amersfoort* N Sp M W Henning—p 561
Physical and Emotional Periodicity in Women R A McCance M C Luff and E E Widdowson—p 571

Streptococcus in Milk Stored at Atmospheric Temperatures—Pullinger and Kemp tried to determine whether *Streptococcus pyogenes* can multiply in milk stored under normal conditions. The main commercial grades of milk have been investigated, i. e., raw (graded and ungraded), pasteurized

and sterilized milk. It was found that *Streptococcus pyogenes* multiplies readily in sterilized milk stored at 22 and 18 C, and more slowly when stored at 15 C. In fresh raw milk this organism begins to multiply slowly only after from forty eight to seventy-two hours of storage at from 18 to 22 C. In laboratory pasteurized milk the result is similar, but both commercially pasteurized milk and raw graded milk bottled for distribution sour too rapidly for multiplication to take place after artificial contamination. These facts suggest that widespread epidemics are rarely due to extensive multiplication of *Streptococcus pyogenes* in milk during commercial or household storage. The initial degree of contamination of milk with *Streptococcus pyogenes* has no influence on this organism's ability to multiply during storage. The failure of *Streptococcus pyogenes* to multiply during storage is due to its natural reluctance to grow at atmospheric temperatures, the bacteriostatic action of the milk and the readiness with which saprophytic bacteria multiply at atmospheric temperatures. Infected cows play a major part in the spread of milk-borne *Streptococcus pyogenes* epidemics. Routine investigation of apparent milk-borne epidemics should include the immediate bacteriologic examination of an individual sample of milk from every cow concerned in the supply under suspicion.

Journal of Laryngology and Otology, London

52 589 660 (Sept.) 1937

- *Injuries of Frontal and Ethmoidal Sinuses, with Especial Reference to Cerebrospinal Rhinorrhea and Aerocele H Cairns—p 589

Injuries of Frontal and Ethmoidal Sinuses—Cairns divides cases of cerebrospinal rhinorrhea into four groups: those that occur in the acute stage of a head injury, those that occur as delayed complications of a head injury, those produced during operation on the cranium or the accessory sinuses and cases of spontaneous cerebrospinal rhinorrhea. In addition he considers cases of brain abscess, meningitis and intracranial aerocele that arise as a result of injury to the frontal and ethmoidal sinuses. He gives cases that illustrate the various ways in which cerebrospinal rhinorrhea and intracranial infection may occur after fractures of the frontal and ethmoidal sinuses produced by violent impacts on the forehead or face. In some cases, and particularly in airplane accidents, the upper and lower jaws are also fractured, and there is dissolution of the bony connections of the facial bones to the base of the skull. In fractures of the frontal sinus and cribriform plate there is serious risk of intracranial infection not only immediately after the accident but also at a later period, when any new catarrhal infection of the nasal passages may break through barriers weakened by previous injury. Infection usually takes the form of leptomeningitis, but sometimes it may spread through the substance of the brain, producing abscess of the frontal lobe or purulent ependymitis. More active measures should be exercised in repairing the injured dura by means of transfrontal operation and sutures, or fascial grafts. The indications for urgent surgical intervention are clear in cases of injury to the dura during intranasal operation on the ethmoidal and sphenoidal sinuses and in cases of delayed cerebrospinal rhinorrhea and aerocele following head trauma. In the acute stage of frontal and ethmoidal injuries the case for immediate operation has not yet been clearly established. Greater accuracy of diagnosis of the side and site of injury to the cranial base is necessary before immediate operation, with the attendant risk of aggravating shock already present, can be justified. Much can be done along these lines by more thorough roentgenography of the anterior cranial fossa. Congenital deficiencies in the cribriform plate may contribute to the production of cerebrospinal rhinorrhea, both spontaneous and traumatic, and these also can be disclosed by roentgenograms.

52 661 732 (Oct.) 1937

- Deaf Mutism of Traumatic Origin Case C S Hallpike—p 661
*Tuberculous Ulcerations of Mouth and Pharynx F C Ormerod—p 675

Tuberculous Ulcerations of Mouth and Pharynx—In analyzing the cases seen at Brompton Hospital in the last fifteen years, Ormerod has found statistics of nearly 17,000 cases referred to the throat department, in about two thirds of

which there was tuberculous infection and, in the others, a nontuberculous condition of the chest. During this period there were 3,120 cases of tuberculosis of the larynx. There were twenty cases of tuberculosis of the tonsil, thirty-two of the pharynx, four of the postnasal space and two of the lips. He has analyzed more critically the cases seen in the last five years, of which there were twenty-one of tuberculosis of the mouth and pharynx. Patients having tuberculous lesions of the mouth and pharynx are slightly younger than those having disease of the larynx, mostly being from 20 to 30 years of age. The patients with laryngitis live longer, and they may overlap into the next decade, so the incidence is probably much the same. Tuberculous disease in the pharynx and mouth is nearly always a complication of severe disease in the lung. It is a bad sign and shows that the patient's resistance to the disease has broken down. Of the twenty-one cases, both lungs were involved in nineteen, and in many cases all three zones of the lungs were implicated to some degree. Examination of the sputum was positive in fifteen, negative in three and there was no record of it in three others. It was perhaps positive in two of these. The larynx was not involved in six cases. In one case there was congestion of the vocal cords, and in two there was swelling of both ventricular bands. In the remaining twelve there was severe laryngeal disease. In appearance these ulcers are flat with an irregular edge, not deep. They have a slightly undermined edge, the base is granular and covered with tenacious mucus. These patients suffer from a great outflow of mucus, one of their major troubles, necessitating perpetual spitting and swallowing. The presence of mucus on the base of the ulcer assists the diagnosis. The chief symptom in the pharyngeal cases is the extreme pain, so that swallowing is difficult. Ten cases are presented that illustrate some of the types of ulcerations that are encountered.

Journal of Physiology, London

90 371 510 (Sept 17) 1937

- The Female Prostatic Gland and Its Reaction to Male Sexual Compounds. V Korenbevsy —p 371
Action of Anticoagulants. J O W Barratt —p 377
*Role of Appetite in Control of Body Weight. N F MacLagan —p 385
Ascending Spinal Pathways of Pupillo-dilator Fibers. A A Harper and B A McSwiney —p 395
Radiographic Examination of Dental Tissues in Relation to Their Histologic Structure. J Thevils —p 403
Excitation of Action Potential of Molluscan Unstriated Muscle. C M Fletcher —p 415
Some Characteristics of Action of Urine on Amphibian Melanophores. S H Raza and W K Spurrell —p 429
Maintenance by Estrin of Luteal Function in Hypophysectomized Rabbits. J M Robson —p 435
Oxidation of Glucose as Function of Its Supply. M Wierzechowski —p 440
Behavior of Muscle Following Injection of Water into the Body. M Grace Eggleston —p 465
Reflexes from Bladder and Large Intestine. A E Barclay and K J Franklin —p 478
Rate of Excretion of India Ink Injected into Lungs. A E Barclay and K J Franklin —p 482
Histamine like Activity of White Blood Cells. C F Code —p 485
Isolation of Histamine from White Cell Layer of Centrifugated Rabbit Blood. C F Code and H R Ing —p 501

Role of Appetite in Control of Body Weight—MacLagan gave an unlimited amount of food to rabbits for six hours each day and measured the actual amounts of food eaten in relation to physiologic and pharmacologic influences. Rabbits are little affected by psychic influences and their appetites are quite unimpaired by any incidental manipulation. Mechanisms possibly involved in the normal regulation of body weight are discussed, special stress being laid on the control of the appetite as the most important single factor. Appetite is defined for the present purpose as the amount eaten in a standard time when an unlimited diet is presented to the animal, and it is not intended to denote a psychologic state. A study has been made of the appetite in rabbits with the following results. The appetite normally reaches a maximum after a fast of eighteen hours. It is increased above this maximum by a period of undernutrition. A simple fast of longer (or shorter) than eighteen hours reduces the appetite. The effects of various drugs on the appetite have shown that insulin is the only one on the plus side. Pitressin and atropine had to be given in rather large doses to produce any effect, the former caused slight diarrhea in three of eight animals and the latter gave full dilatation of the pupils.

Lancet, London

2 665 722 (Sept 18) 1937

- The Psychologic Factor in Cardiac Pain. E Wittkower —p 665
Action of Normal and Diabetic Serums on Animal Liver Glycogen in Vivo and in Vitro. O L V De Wesselow and W J Griffiths —p 670
Laryngeal Diptheria and Tracheotomy. W Napier —p 673
*Inhibition of Menstruation and Ovulation by Means of Testosterone Propionate. S Zuckerman —p 676
Absorption and Excretion of Iron. R A, McCance and E M Widdowson —p 680
*Infective Warts in Workers Using Bone Glue. A I G McLaughlin and J W Edington —p 685
Food and Fluid in Typhoid Fever. S W Smith —p 686

Inhibition of Menstruation with Testosterone Propionate—Zuckerman observed that the administration of 25 mg of testosterone propionate twice a week to normal mature female rhesus monkeys stopped the menstrual cycle during the period of injections (up to seven months). The internal reproductive organs were not injured by the treatment, and in one animal menstruation recurred about a week after the last injection. Follicular growth and luteinization were both inhibited. Apart from enlargement of the clitoris, no other significant clinical changes occurred. It is suggested that testosterone propionate may be of clinical value for the induction of temporary sterility and the control of uterine bleeding.

Infective Warts in Workers Using Bone Glue—McLaughlin and Edington report an outbreak of warts that occurred in a cardboard box factory. On investigation nine girls were found to have warts, mainly on the dorsal aspect of the hands and fingers, especially on the skin just proximal to the knuckles. All nine girls during their work came in contact with bone glue. Two other girls who also worked with glue had no warts. It was learned that warts on the hands of a worker were first noticed about three years previously, and nearly all the affected girls gave a history of having had recurrent warts for at least two years. Clinical experiments were made on two groups of volunteers (four in each group). One group was treated with glue obtained from the pots of glue used by the girls at their work, and the other group with glue which was of the same variety (obtained from the factory stock) but was made up in the laboratory and had not been handled by any of the workers. The glue in each case was applied once a week to the back of the left hand, where it was well rubbed in and left in place for three or four hours. It was established that the pots of glue in use in the factory had been infected with wart virus and were being reinfected by girls who had warts on their hands. Therefore all girls suffering from warts were taken away from the work involving contact with glue and sent to the hospital for treatment. They were not allowed to handle glue until the warts had disappeared entirely. No fresh or recurrent cases have arisen since this procedure was adopted. It is concluded that the glue became infected while it was on the working benches, because here it was at a temperature below the lethal point for the wart virus. The original infection had probably been introduced by the first infected worker who had had her hands infected outside the factory.

South African Medical Journal, Cape Town

11 629 662 (Sept 25) 1937

- Comparative Study of Formation of Antibodies in the Serum of Persons Treated with Three Types of Typhoid Vaccine. W Lewin, J H S Gear and D Landau —p 629
Medical Establishments and Institutions in the Cape. III Civil Hospitals, Prisons and Reformatory. P W Laidler —p 635
Id. IV Somerset Hospital, the Slave Hospital and the First Pauper Establishment. P W Laidler —p 641
So-Called Vitamin F. H R Hudon —p 650
Biochemical and Biologic Investigation of Strains of *Corynebacterium Diptheriae* Occurring in Port Elizabeth and Environs. N Emmerson —p 652
Control of Species of Chironomus Meigen (*Diptera Chironomidae*) in an Artificial Lake by Increasing the Salinity. B de Meillon and F C Gray —p 658
*Immunization Against Typhoid Fever by Means of a Single Injection of Typhoid Endotoxin Vaccine. E Grassel, W Lewin and T van der Merwe —p 660

Immunization Against Typhoid—Grassel and his associates prepared a batch of typhoid endotoxin vaccine with an antigenic concentration about 60 per cent higher than the vaccine administered in two injections, 0.75 cc. of which was injected subcutaneously in the deltoid region in a group of

thirty-nine young European adults. After fourteen days the average H agglutinin titer in the serum of the inoculated persons was 1,500, and the average O titer 1,400. The average titers three weeks after the inoculation were 1,000 and 1,400 respectively, and after four and one-half months the corresponding titers were 1,200 and 1,75. Thus a single injection of this vaccine produced an average O agglutinin titer higher than that produced by the vaccine of less antigenic content, but the H titers showed no gross difference. The average agglutinin titers produced by the single injection of the vaccine of higher antigenic concentration, however, dropped more rapidly than those produced by three injections of the weaker vaccine. Six non-European adults were inoculated subcutaneously in the deltoid region with 0.5 cc of endotoxoid vaccine the antigenic concentration of which was double that used in the group of thirty-nine Europeans, and thirty-four non-Europeans from 7 to 15 years of age were inoculated subcutaneously with the same vaccine. The dosage for children up to 10 years of age was 0.2 cc, and for the remainder 0.3 cc. At the same time a further group of similar ages was inoculated by means of two injections of the vaccine of 60 per cent lower antigenic concentration. No gross difference in the clinical reactions was observed between the two groups. Moderate local reactions were observed, but there was no marked general disturbance. On the results obtained from these preliminary experiments a field trial was made of the single injection method for typhoid prophylaxis. An experiment was conducted on the non-European labor complement of the Van Ryn Deep Gold Mine. The endotoxoid used was of similar antigenic concentration to that injected into the thirty-nine European adults. The mine laborers, however, were given 1 cc subcutaneously in the pectoral region. At the end of July 1937, 5,445 individuals of a total personnel of 6,652 had been so treated. In no case did the inoculation cause a reaction sufficient to prevent the laborer from continuing his work. Nine cases of typhoid occurred after immunization by the single inoculation method had been instituted. Of these, eight occurred in uninoculated persons with two deaths, and one in an inoculated person, a nonfatal case. The latter person, however, had been inoculated only four days before his admission to hospital suffering from the disease. During 1936 a total of fifty-two cases of typhoid occurred, all of them in uninoculated individuals. The similarity of the results obtained in this investigation to those of large scale immunization of non-European Rand mine laborers by means of two injections of typhoid endotoxoid vaccine suggests that the single inoculation method has proved efficacious in the prevention of typhoid. These preliminary results justify an extensive field trial in which the two methods can be strictly compared. It appears that a single injection of typhoid endotoxoid vaccine of high antigenic concentration produces a definite degree of immunity. The duration of the immunity afforded is, however, unknown.

Tubercle, London

19 148 (Oct.) 1937

- Bronchography Following Thoracoplasty H J Robinson—p 1
Blood Examinations in Pulmonary Fibrosis of Hematite Iron Ore Miners J Crow—p 8
How Long Should Collapse Therapy Be Delayed? G Marshall—p 19
Inhibitory Effect of Human Saliva on Growth of Tubercle Bacilli: E Piasecka Zeyland and J Zeyland—p 24
The Association of Intrathoracic and Extrathoracic Tuberculosis C K Petter—p 28

Inhibitory Effect of Saliva on Tubercle Bacilli—Piasecka-Zeyland and Zeyland examined the direct action of human saliva on tubercle bacilli. They repeated the experiments many times, using the saliva of the same subjects to check the results in order to convince themselves of the indicated fact that human saliva exerts an inhibitory effect on the growth of tubercle bacilli. The protracted heating at 56°C of the saliva is without any influence on the observed inhibitory effect. They believe that the decrease in the numbers of colonies after treatment with saliva is not the result of an agglutination of the bacilli by the saliva. At present the experiments allow them to conclude that in certain circumstances the addition of human saliva inhibits the growth of tubercle bacilli. This effect depends not only on individual variations but also, in a minor degree, on unknown factors, as is evident by slightly varying results in the particular experiments.

Mémoires de l'Académie de Chirurgie, Paris

83 971 1036 (Oct. 13) 1937 Partial Index

- Bant's Disease P L Mirizzi—p 983
Isolated Palmar Luxation of Inferior Extremity of Ulna Treated with New Technic of Sauve and Kapandji Vergoz and Choussat—p 99
Anterior Gastro Enterostomy A Chaher and V Richer—p 1000
Subperiosteal Resection of Tibia for Osteomyelitis Two Cases. B. Desplas—p 1016
*Transmural Injection of Iodized Oil for Preoperative and Postoperative Exploration of Large Pulmonary Abscess P Pruvost and J Quenu—p 1025

Transmural Injection of Iodized Oil in Pulmonary Abscess—Pruvost and Quenu decided to inject iodized oil by means of a needle through the thoracic wall. This method is not entirely new, but it has been criticized as often unsuccessful and not exempt from such risks as hemorrhage, the extension of infection and gaseous embolism. The authors, however, cite reports from the literature and three cases of their own observation in which the injection of iodized oil through the thoracic wall proved simple. The injection of a small quantity of the opaque oil gives exact information about the location and the form of the cavity. It is advisable not to inject more than 10 cc. A comparison of roentgenograms made with and without the contrast medium clearly demonstrates the superiority of those made with the opaque oil. On the basis of the precise information provided by them, it was possible to establish in each case the best way of approach and the shortest and most favorable route for drainage. After the operation the oil is injected through the drain to observe the gradual filling up of the cavity and the selection of the best time for the cessation of the drainage. To free the method from possible risks, it is essential to select the cases carefully and not to neglect essential precautions. The puncture should be made only after a complete clinical and roentgenologic examination of the patient, which reveals an abscess of considerable size and of relatively superficial location. It is essential to select with care the site of puncture. The needle should not be too thick, in order that the oil may pass easily, it should be sufficiently heated. It is necessary to aspirate with the syringe while the needle is introduced and while it is withdrawn. Iodized oil should be injected only if purulent fluid is withdrawn or if there is an odor. Iodized oil is well tolerated. A part of it is expelled through the bronchial passage during the hours following the examination. The remainder is gradually evacuated or absorbed. The authors reach the conclusion that this transthoracic injection of iodized oil is a valuable aid before and after the operation for a large pulmonary abscess.

Presse Medicale, Paris

45 1167 1482 (Oct. 20) 1937

- Antipyrine in Treatment of Acute Articular Rheumatism L Bouchet and M Leyrat—p 1467
*Efficacy of Intravenous Injections of Sodium Bromide and of Atropine Sulfate in Treatment of Gastric and Duodenal Ulcer A Landau and W Heyman—p 1468

Sodium Bromide and Atropine Sulfate in Gastric Ulcer—Landau and Heyman resorted to the use of sodium bromide and atropine in three refractory cases of gastric ulcer. The sodium bromide was given intravenously in doses of 10 cc of a 10 per cent solution and the atropine sulfate was given in doses of 1 mg. The first patient was given forty-nine injections in all and the other two received twenty-seven and fifteen, respectively. The patients tolerated the injections well. Occasionally they complained of dryness in the mouth, but otherwise there were no complaints. The pains commenced to subside after the first few injections. The general condition and the weight improved and roentgenologic examinations revealed the gradual decrease in the size of the niche. Discussing the mode of action, the authors suggest that the sodium bromide inhibits the central nervous system and the irritations arising there and that the atropine acts on the terminations of the vagus nerve in the gastric and duodenal mucosa. This interrupts the vicious circle which is based on the instability of the sympathetic nervous system. The new conditions favor the cicatrization of the ulcer, which in turn diminishes the instability of the sympathetic. The authors conclude that this treatment represents progress in the conservative treatment of gastric ulcer.

Schweizerische medizinische Wochenschrift, Basel

67 961 992 (Oct 9) 1937 Partial Index

- Studies on Seasonal Fluctuations of Vitamin C Content of Mothers and Cow's Milk, on Vitamin C Requirements of Nurseries and on Vitamin C Supply of City Population of Switzerland T Baumann—p 962
- Prophylactic Treatment of Children from Mothers with Latent Syphilis Bernheim Karrer—p 965
- Glycogen Disease Margrit Esser and S Scheidegger—p 970
- *Cerebellar Atactic Form of Heine Medin's Disease E Glanzmann—p 972
- Diagnosis of Appendicitis During Childhood E Hagenbach—p 974
- *Pneumococcal Peritonitis During Childhood Helene Mundorff—p 982

Cerebellar Atactic Form of Poliomyelitis—Glanzmann reviews the literature on the cerebellar atactic form of poliomyelitis and describes two cases. The onset is generally slow and the patients usually complain about fatigue in the legs and occasionally also in the arms. The weakness in the legs becomes so severe that the children are either unable to walk or, when attempting to do so, they stagger. The disorder may take its course without fever or with low fever. As the walk becomes more and more atactic, the children develop a tendency to fall toward one or the other side. A tendency to fall backward is comparatively rare. Analysis of the ataxia revealed in the author's cases the absence of Romberg's swaying, but in a case reported by Wieland this symptom was present. The finger-nose experiment often fails, in the knee-heel test, the child finds the knee only after long searching and in aiming movements post-pointing with hand and foot is observed. It is interesting that the signs of meningeal irritation which ordinarily are frequent in poliomyelitis seem to be entirely absent in the cerebellar atactic form. There is no rigidity of the neck, no spine sign and even Amoss's sign may be lacking. There are only indications of Kernig's sign and of the positive Lasegne sign. The four cardinal symptoms that are so important for the diagnosis of poliomyelitis fail completely in the cerebellar atactic form. Of especial interest is the lack of localized paralysis of the extremities. The musculature of the back and of the extremities show only a surprising lack of tonus and a more or less pronounced motor weakness. The cutaneous reflexes, particularly the abdominal and the cremasteric, are frequently increased, as are also occasionally the plantar reflexes. This increase in the cutaneous reflexes seems to indicate an irritation in the cerebral reflex arcs. The behavior of the tendon reflexes varies, they may be increased in both extremities or in only one and reduced or abolished in the other. In the two reported cases, the patellar and achilles tendon reflexes were abolished. The lumbar puncture reveals only a slight or no increase in pressure. The spinal fluid is clear, the Pandy reaction is positive and the Nonne reaction usually negative. As regards the clinical course, the author says that complete cure is the usual outcome. That this cerebellar atactic form is a form of poliomyelitis is proved by the fact that it occurs at the time of epidemics and that transitional forms exist. The author suspects that the process is localized in the brain stem and in the cerebellum.

Pneumococcal Peritonitis During Childhood—According to Mundorff, pneumococcal peritonitis still presents a much disputed problem, for the etiology, diagnosis, therapy and prognosis have not been completely clarified. At the children's clinic in Basel, thirty-three cases of pneumococcal peritonitis have been observed in forty years. In analyzing this material, the author found a predominance of children from rural districts. She says that this observation, as well as the fact that most of the patients were girls, has been made by several authors. The primary form of pneumococcal peritonitis has a sudden onset with diarrhea, high fever, small soft pulse, general unrest and dyspnea, that is, the aspects are almost those of a true toxemia. The local examination usually reveals sensitivity to pressure over the entire abdomen. The abdominal respiration is not so noticeably repressed as in appendicitis. Among the thirty-three cases there were seventeen with an acute onset and the aspects of a severe toxic process. The leukocyte count was high (between 16,000 and 34,000). Nine of the seventeen patients died. Death always followed within a few hours or, at the latest, three days after the intervention. In the other eight children recovery required from four to eight weeks and complications such as pneumonia, nephritis and late abscesses developed. The aspects of secondary pneumococcal peritonitis which develops in the course of other

pneumococcal infections, are quite different from those of the acute or primary form. In four of the sixteen children with the secondary form of pneumococcal peritonitis, the previous history revealed pneumonia. In the majority of the cases there developed within two or three weeks a generalized peritonitis, or, as happened in eight cases, a typical umbilical abscess, which on incision yielded a creamy pus that contained pneumococci. Five children died and eleven recovered. The hospitalization lasted from several weeks to five months. Of the complications, the pulmonary ones were the most frequent. In two instances rib resection had to be done on account of empyema. The author gained the impression that the secondary form of pneumococcal peritonitis has a more favorable prognosis than has the primary form.

Annali di Ostetricia e Ginecologia, Milan

59 903 1019 (Aug 31) 1937

- Curability of Gynecologic Diseases by Salsomaggiore Mineral Waters E Alfieri—p 903
- *Influence of Time Factor in Actinic Sterilization of Ovary E Momigliano—p 925
- Anatomic Changes in Ovaries of Syphilitic Fetuses F Matteucci—p 957
- Renal Function in Pregnancy as Tested by Rehberg and Ferro-Luzzi Methods S C Russo—p 973

Actinic Sterilization of Ovary—In experiments on adult rabbits, Momigliano found that a large dose of roentgen irradiation administered in a single treatment may fail to destroy the follicles, whereas it causes rapid and progressive atrophy of the ovary. Roentgen irradiations, administered in three or four fractional doses at intervals of a few days up to a total castrating dose, have a selective destructive action on primordial follicles without injuring the ovarian tissues, vessels and interstitial glands. When the intervals between irradiations are too short or too long, the biologic action of the irradiations diminishes. The influence of fractional doses in increasing or diminishing the biologic action of the rays depends on the rhythm of cellular proliferation after the irradiations, which is unknown. Primordial follicles, in evolution to maturity, are more sensitive to the biologic action of roentgen irradiation than immature and graafian follicles. Fractional repeated doses act by stimulating primordial follicles to maturity and arresting them in their further evolution. The treatment results in complete destruction of the follicular system with consequent permanent sterility of the ovary. In the clinical field the ideal is administering fractional doses chronologically during the phases of greater cellular proliferation of the ovary. Actinic castration will give better results than those obtained by irradiations with only a large dose, if a proper chronological rhythm in administering fractional doses is established.

Archivio Italiano di Chirurgia, Bologna

46 1120 (May) 1937

- Procaine Hydrochloride Treatment of Painful Scars A Pozzan—p 1
- Unilateral Large Polycystic Kidney in Child Operation and Recovery Case M Carravetta—p 15
- Diastases of Blood and Urine in Surgical Diseases of Abdomen and Digestive Tract F de Leo—p 33
- *Function of Liver in Course of Anesthesia and Surgical Interventions P Gagliardi—p 65
- Experimental Cysts of Liver E Caldarera—p 89
- Encysted Inguinal Hernia Case S Teneff—p 107

Function of Liver During Anesthesia—Gagliardi studied the function of the liver in patients suffering from surgical diseases during anesthesia. The patients were placed in two groups—those with a normal liver and those who were suffering also from diseases of the liver or of the biliary tract. The studies were made by doing bengal rose tests and tests for bilirubinemia shortly before administration of anesthesia and fifteen or thirty minutes after beginning the operation. In some cases the tests were repeated two, four and eight days after the surgical intervention. The author concludes that in patients with a normal liver, anesthesia and the surgical trauma induce more or less intense but transient insufficiency of the liver. The intensity of the insufficiency depends on the type of anesthesia and on the more or less grave nature of the operation. In patients with latent or declared insufficiency of the liver, the latter is aggravated by the action of anesthesia and surgical trauma. The reticulo endothelial system of the liver is more sensitive than the other structures of the organ.

to the action of anesthesia and surgical trauma. The bengal rose test is extremely sensitive for showing liver insufficiency, especially if it is performed in association with the test of qualitative bilirubinemia.

Pediatrics, Naples

45 857 956 (Oct. 1) 1937

- *Cultivation of Leishmania in Goat's Milk A Laurinsich—p 857
- Behavior of Bacteremia in Typhoid Treated by Vaccines P Rotossa—p 867
- Possibility of Obtaining Antidiphtheritic Immunization with Single Dose of Precipitated Anatoxin L Cerza—p 885
- Chronic Gastrointestinal Ulcer in Children Cases N Toro—p 904
- Gastrectasia in Infant with Congenital Abnormality of Duodenum Case, Ienta Szejn—p 924
- Fatal Hemorrhagic Acute Meningo-Encephalic Disease in Course of Undulant Fever in Infant Aged 2 Years Case F Fontana—p 930

Cultivation of Leishmania in Goat's Milk—Laurinsich made investigations on cultivating *Leishmania infantum* and *canis*. The culture mediums were prepared with pure goat or cow's milk alone or combined with rabbit's blood or the N N N culture medium. According to the author the cultural development of *Leishmania* greatly depends on the physical, chemical and constitutional conditions of the medium. Goat's milk, because of the amount of salts and dextrose that it contains and also its hydrogen ion concentration and stronger resistance against desiccation and aging than that of other culture mediums, is a favorable culture medium for *Leishmania*. The latter develops well in goat's milk, better if the milk contains hemoglobin and still better in mixed goat's milk and N N N culture mediums in which the organism develops exuberantly, lives longer than in any other culture medium and acquires a capacity of intense reproduction.

Prensa Médica Argentina, Buenos Aires

24 1865 1908 (Sept. 29) 1937

- Meningioblastoma with Cranial Hyperostosis Case J M Jorge and D Brachetto-Brain—p 1865
- *Roentgen Skeletal Alterations in Congenital Hemolytic Jaundice M Acuña—p 1878
- Late Appearance of Electrocardiographic Changes in Myocardial Infarct J E Israel and J Ferretti—p 1883
- Sacroccygeal Chordoma in Childhood J L Monserrat and M L Olascoaga—p 1889

Skeletal Roentgen Changes in Congenital Hemolytic Jaundice—Acuña reports the cases of a group of children who were suffering from congenital hemolytic jaundice and who presented the same clinical symptoms. There was a high index of jaundice and a diminished globular resistance in all cases. An erythroblastic reaction and skeletal alterations of the type of those which are found in erythroblastic anemia were present in the minority of cases. The changes of the bones and the erythroblastic reaction were more intense in younger than in older children. Splenectomy resulted in disappearance of jaundice and improvement of the general condition of all the patients. However, the skeletal alterations and the erythroblastic reaction were not arrested by splenectomy. The author believes that the association of an erythroblastic reaction and skeletal alterations in congenital hemolytic jaundice shows a new form of hemolytic jaundice which is probably related to erythroblastic anemia. Three cases are reported.

Beiträge zur Klinik der Tuberkulose, Berlin

90 307 390 (Sept. 18) 1937 Partial Index

- Chemotherapeutic Action on Hematology Action of Solganal Bismolsalvan Cure on Hemochimical Picture of Tuberculous Patients L Mandl—p 321
- Anatomic Investigations on Incidence of Tuberculosis E Uehlinger and R Blangy—p 339
- *Studies on Pneumothorax Pressure of Pneumothorax in Case of Formation of Exudate E Schill—p 382
- *Increase and Prolongation of Tuberculous Allergy in Guinea Pigs by Preliminary Treatment with Killed Tubercle Bacilli in Connection with Hydrous Wood Fat and Petrolatum G Hensel—p 387

Studies on Pneumothorax—Schill discusses the behavior of the mediastinum in case of pneumothorax, particularly in case of the formation of an exudate. He shows that after the formation of an exudate the mediastinum may become so rigid that it does not yield to pressure exerted either on the side of the seropneumothorax or on the contralateral side. In other cases the mediastinum remains flexible even after the formation of an exudate, probably because of the short duration. An

exudate is not the only factor that may cause mediastinal rigidity. Callosity of the pleura may develop in the absence of an exudate. The rigidity of the mediastinum, whether it has developed with or without the aid of an exudate, is of great significance in the collapse therapy of bilateral pulmonary tuberculosis, for in case of a rigid mediastinum the two lungs must be treated as separate entities. The degree of collapse must be regulated on both sides according to need, for it can not be expected that the pressure on one side will influence the other side, as is the case in the presence of a yielding mediastinum, when the collapse on one side produces automatically some collapse on the other side. The latter effect has an advantage in bilateral processes, but in unilateral tuberculosis it has a disadvantage in that the yielding mediastinum makes it difficult to obtain the desired degree of collapse on one side. On the basis of these observations the author stresses the importance of the measurement of the contralateral pressure during refilling of the pneumothorax.

Tuberculous Allergy—Hensel demonstrates that by treating guinea pigs with killed tubercle bacilli it is possible to produce a slight, rapidly disappearing tuberculin allergy. The specific allergy can be considerably increased and prolonged by using for the preliminary treatment killed tubercle bacilli together with hydrous wool fat and petrolatum. The allergy thus produced is to serve as a basis for further investigations on the allergy-immunity problem.

Deutsches Archiv für klinische Medizin, Berlin

180 585 696 (Sept. 15) 1937 Partial Index

- Studies on Family with Muscular Dystrophy and Hereditary Prognosis of Its Members S Kostakow and F Derrv—p 585
- Lymphatic Leukemia with Exclusive Localization in Bone Marrow and Significance of Sternal Puncture for Diagnosis Case E Storch—p 612
- Acute Lymphatic Leukemoid Reaction ("Acute Myeloid Leukemia") in Sepsis Replacement of Puncture of Organ by Qualitative Examination of Blood J Arneith—p 620
- Sedimentation Reaction in Blood Serum by Means of Sodium Hydroxide B Sereny—p 630
- Studies on Action of Bivalent Iron on Iron Metabolism W Nonnenbruch and F Pendl—p 636
- *Some Observations on Relation of Carotene to Vitamin A in Human Blood Serum W Stepp and H Wendt—p 640

Carotene and Vitamin A in Human Blood Serum—Stepp and Wendt maintain that the body is not able to form vitamin A from inactive substances but has to rely for its supply on the intake of the vitamin in its final form or in the form of its provitamin, carotene. Human subjects and herbivorous animals are capable of transforming vegetable carotene to a considerable extent into vitamin A, whereas carnivorous animals have this capacity to a much smaller extent or not at all, the latter obtain their vitamin A in its completed form from meat. The blood serum of healthy persons contains both vitamin A and carotene. In case of an inadequate diet the vitamin A may not be demonstrable in the serum, but a complete absence of carotene was never observed in these rare cases. While the quantity of carotene and vitamin A in the serum fluctuates, the examination of a large number of healthy adults living on a mixed diet reveals a certain average value. The author measured the vitamin A content of the serum of healthy young men in Lovibond units (blue) and the carotene in Lovibond units (yellow). Although the two measures differ, the average ratio of carotene to vitamin A was as 26 to 1 in examinations that were made during July. When the same subjects were examined during October and November, the ratio of carotene to vitamin A had become greatly altered in that the carotene had increased much more than the vitamin A. It appears that, if large amounts of carotene are taken in the organism transforms only a part of it into vitamin A, whereas if only small amounts are consumed, it may transform the largest amount. In the latter event the vitamin A may even be present in larger amounts than the carotene. This seems to indicate that the organism has the tendency to maintain a certain level for vitamin A in the serum. The authors further discuss the relation between the carotene and vitamin A contents of the serum in the different age groups and in various pathologic conditions. They found that in the higher age groups the carotene content of the blood has a tendency to increase, the vitamin A to decrease. In hyperthyroidism the vitamin A requirements are increased and the values in the

blood normal In hypothyroidism, in myxedema, the transformation of carotene into vitamin A is impaired In acute hepatitis, normal as well as slightly increased values were observed, whereas in the more chronic hepatic disorders the carotene as well as the vitamin A values were greatly decreased In diabetes mellitus an increase in carotene as well as in vitamin A is the rule The authors admit that studies on larger materials will be necessary and stress that the determination of only one substance is insufficient for a proper estimation of the vitamin A metabolism

Frankfurter Zeitschrift für Pathologie, Munich

51 1170 (Sept 16) 1937 Partial Index

- Central Necrosis of Liver G Rothe—p 1
*Formation of Diverticula on Appendix Eleonore Wunder—p 18
*Infantile Form of Marble Bone Disease on Basis of Complete Examination of Skeleton G Gerstel—p 23
Aspects of Gemmangioma and Its Relations to Angiosarcoma H Schmidt—p 43
Miliary Tuberculosis in Pancreas of Children H W Sachs—p 63
Pathologic Anatomy of Brucella Abortus Infection A von Albertini and W Lieberherr—p 69
Tumors of Parathyroids and Osteitis Fibrosa Generalisata Cystica Recklinghausen Report of Three Cases Margarete Meisel—p 104

Formation of Diverticula in Appendix—Wunder describes the appendix that was removed from a man, aged 39, who had for some time vague pains in the abdomen, which gradually became localized in the right hypogastric region During the six months period that has elapsed since the operation the man has been free from complaints The examination of the appendix disclosed internal (intramural) as well as external false diverticula, then there were signs of chronic inflammation with scar formations in the musculature and, in addition to this, the musculature was interspersed with nodules consisting of connective and fatty tissues The cause and the time and course of development of this process could not be ascertained The congenital character could not be determined, because chronic inflammations were present, the previous acute stages of which also must have impaired the musculature

Infantile Form of Marble Bone Disease—Gerstel shows that marble bone disease can be differentiated into two groups In the first type, the infantile one, the disease progresses from the time of birth during the first months or years of life and leads to early death It is probable that this form begins in utero The second type of marble bone disease begins after puberty In this type the onset is more sudden It frequently begins with a spontaneous fracture The author describes the results of the pathologic-anatomic, histologic and chemical studies on a boy who during life presented the clinical aspects of marble bone disease with anemia The boy died at the age of 3 years and 9 months as the result of a secondary suppurating infection The author emphasizes that the disease of the bone, that is, of the static apparatus and its formative tissue, the epidiaphysal line, must be differentiated from the disease of the bone marrow and from the disease of the endosteum It should be remembered that, as regards origin and function, bone and bone marrow are entirely different In this connection it is pointed out that in some species of animals the bones do not contain marrow, hemopoiesis taking place in special glands The author shows further that the endosteum, which separates the true bone tissue from the bone marrow, is not merely a separating layer but is capable of rebuilding the bone Thus the bones combine a triad of tissues (1) the static apparatus or bone tissue in the strict sense of the word, (2) the separating and transforming endosteum and (3) the bone marrow The author further gives his attention to the question as to which apparatus is involved in case of marble bone disease On the basis of microscopic and chemical studies he denies that the so called marble bones are bones To be sure, there develop small areas of true bone, but they are insignificant in comparison with the marble masses The marble mass consists of two parts which differ in origin and remain separate the continuation of the cartilaginous matrix and the filling substance The essential disturbance in the course of ossification consists in toothlike projections of unused cartilaginous matrix into the diaphyses These projections prevent the formation of primitive trabeculae, so that the primary bone becomes globulated and grows as a filling mass down into the diaphyses Primary bone marrow is found at the border of the epidiaphyses, at which site there is no endosteum, that is, no cells which

effect rebuilding of the primary bone and the complete decomposition of the cartilaginous matrix On the outer surface of all bones brownish deposits are found which in their microscopic aspects resemble brown tumors and in which rebuilding of bone takes place The periosteum is not involved in this process

Klinische Wochenschrift, Berlin

16 1337 1368 (Sept 25) 1937 Partial Index

- Formation of Tissue Fluid and of Lymph J Melka—p 1337
*Investigation on Vitamin A in Pneumonia T Lindqvist—p 1345
Flavin Content of Human Milk W Neuweiler—p 1348
Can Bile Acids Be Demonstrated in Urine of Healthy Persons? W Wilken—p 1350
Thyroid and Sex Hormone Antithyroid Action of Large Quantities of Progynon H Zain—p 1351
Sodium Content of Blood Serum in Myxedema A Margitay Decht—p 1353
*Treatment of Phthisic Night Sweats by Combination of Hypnotics Influencing Brain Stem and Cerebral Cortex A Hofmann—p 1355

Vitamin A in Pneumonia—In view of the limited knowledge on the vitamin A content during infectious diseases, Lindqvist investigated the vitamin A content of the serum of forty-five patients with pneumonia He extracted the carotinoids and the vitamin A from the serum by the method recommended by van Eekelen and Emmerie He observed that the carotinoid and vitamin A content was low during the course of the pneumonia A tabular report indicates that in all but six of the patients the values were below the normal average These low values exist during the first few days of the pneumonia, During the convalescence the values increase rapidly without vitamin A being added to the diet One week after the crisis the vitamin content is usually three times as high as before the decrease in temperature There is no storage of vitamin A in the diseased lung The cholesterol content of the serum is considerably decreased, but this is not responsible for the disturbances in the vitamin A content During the fever period, large quantities of vitamin A are eliminated in the urine The vitamin A content of the liver is in most cases considerably reduced, but there are also cases in which the values are high The author thinks that under pathologic conditions the vitamin A content of the serum is not a reliable measure for the vitamin standards of the organism The low vitamin A content of the serum of patients with pneumonia is partly the result of excessive elimination in the urine Moreover, the mobilization of the hepatic stores may be difficult It was impossible to determine to what extent a low vitamin content was present before the development of the pneumonia

Treatment of Phthisic Night Sweats—Hofmann cites factors and investigations which prove that the secretion of sweat is influenced by the cerebral cortex In the treatment, however, this influence is usually disregarded The author decided to try a central modification of sweats, particularly the central suppression of the sweats of phthisic patients Tuberculous patients, who are subject to profuse night sweats, generally say that their sleep is restless and superficial If they are given an ordinary hypnotic (barbital), that is, one which influences the brain stem, the results are quite favorable However, it should be understood that the patient is not merely prevented from noticing the sweating by his deeper sleep, he actually does perspire less The results are even better if the hypnotic influencing the brain stem is combined with one which influences the cerebral cortex (sodium bromide) The author recommends the combined administration of these two types of hypnotics

Wiener medizinische Wochenschrift, Vienna

87 1043 1070 (Oct 9) 1937 Partial Index

- Epidemiology and Pathologic Anatomy of Influenza C Coronini—p 1043
Practical Methods of Examination in Otolaryngology K Eisinger—p 1045
Diagnosis and Therapy of Chronic Inflammatory Gynecologic Disorders V Foderl—p 1049
*Value of Some Diagnostic Procedures in Diseases of Peripheral Arteries A von Razgha—p 1054
Remarks on New Means of Obliteration of Varicose Veins S Szandicz—p 1057

Diagnostic Methods in Diseases of Peripheral Arteries—According to von Razgha oscillometry and the determination of the cutaneous temperature are the two methods that are used most frequently in the diagnosis of the disorders of the peripheral arteries In some countries oscillography is used

more widely and in others the determination of the cutaneous temperature. The author employed both methods. He shows that for the correct estimation of the oscillometric values it is necessary to consider the factors that influence the form and size of the oscillations. Although sclerotic or spastic narrowing of the vessels may reduce an otherwise normal pulse wave, smaller oscillations do not always signify local vascular changes, for a decompensated cardiac defect may likewise cause a reduction in the pulsatory filling of the vessels. In the presence of certain cardiac defects the local diagnostic value of oscillometry is therefore limited. Further the author shows that, if oscillometry reveals subnormal values, it has to be decided whether the causal factor is an organic or a spastic condition. The latter can be overcome by vasodilatory measures such as a local warm bath and by spasmolytic medicaments. The author compared the effect of an intravenously administered spasmolytic and of a hot bath in twenty-four patients with low oscillatory values. In some patients the two measures had the same effect, in others the intravenous injection proved more effective than the warm bath. Extremely severe vascular spasms may not completely yield to the combined application of the two methods, nevertheless they always effect some dilatation and serial examinations will clarify the spastic character. If oscillometry indicates an organic lesion, the clinical aspects will usually help to decide whether Buerger's disease, a specific arteritis, arteriosclerosis, embolism, thrombosis or aneurysm exists. In discussing the determination of the cutaneous temperature, the author stresses that it is influenced by several external factors and that a comparison of results is justified only if the measurements have been made under the same conditions. In cases of an asymmetry of the temperature between the two sides, oscillometric control tests were made. On the whole, the author gained the impression that the simple determination of the cutaneous temperature is of only slight value and that the oscillometric procedure gives a better insight into the peripheral vascular disturbances.

Nederlandsch Tijdschrift v Geneeskunde, Amsterdam

SI 4779 4918 (Oct. 9) 1937 Partial Index

Lobar Pneumonia. Cornelia De Lange—p. 4785

*Treatment of Schizophrenia with Insulin and with Metrazol. G. W. Kastein—p. 4792

*Significance of Postmortem Roentgenologic Examination of Coronary Vessels for Coronary Thrombosis. C. L. C. Van Nieuwenhuizen and R. H. de Waard—p. 4799

Food Poisoning by Bacillus Botulinus Type B. A. Clarenburg and J. N. Fijen—p. 4806

Treatment of Schizophrenia with Insulin and Metrazol—At Kastein's clinic, a number of schizophrenic patients were subjected to the combination treatment with insulin and metrazol. It was found that, if metrazol is administered during the insulin coma, an epileptic attack can be elicited with half the dose that would be required under normal metabolic conditions. After the epileptic attack that has been elicited by metrazol, the depth of the insulin coma is decreased so that the patient can answer questions and is able to eat alone. Moreover, the blood sugar rises after the injection of metrazol, this increase is greater when the injection is followed by an epileptic attack. Experiments on rabbits confirm these observations on the relation between insulin and metrazol, namely, that the two substances are synergistic as regards the elicitation of the epileptic attack but antagonistic in their effect on the level of the blood sugar.

Postmortem Examination of Coronary Vessels—Nieuwenhuizen and de Waard point out that the development and extension of muscular infarction is determined not only by local changes in the wall of the coronary arteries but also by dynamic factors (collateral blood supply, condition of venous drainage). Therefore changes in the electrocardiogram must be evaluated with care for they are not necessarily caused by anatomic changes in the coronary arteries and in the cardiac muscle. The authors show that the postmortem roentgenologic examination of the coronary system before and after filling with a contrast medium is a valuable aid in throwing light on these problems. They describe observations in five cases. They found that coronary thrombosis may be absent in cases of severe calcification and tension, whereas it may be found in the presence of a moderate degree of calcification and narrowing. Moreover, there is evidence that the clinical aspects of

coronary thrombosis may be produced by acute coronary insufficiency without infarction. Finally the authors describe an infarct that was observed in a patient with a dissecting aneurysm of the aorta. In this patient the sinus venosus was obliterated by the pressure of the aneurysm, this produced stasis in the venous drainage and the latter, together with the insufficient blood supply caused by calcification and the narrowing of the descending branch of the left coronary artery, caused a stasis infarct.

Bibliotek for Læger, Copenhagen

129 287 340 (Sept.) 1937

*Investigations in Illumination of Intoxication Theory in Dementia Praecox with Especial Reference to Attempts at Total Transfusion. P. J. Reiter—p. 287

Bacteriologic Epidemiologic Experiences Concerning Infections with Gastro Enteritis Bacilli of Paratyphoid Group. Ctd. M. Kristensen, K. Boylen and C. Faarup—p. 310

"Total Transfusion" in Dementia Praecox—By "total transfusion" Reiter means emptying most of the patient's blood at one session and introducing an equal amount from a number of donors. There are many practical obstacles—the requirement of preferably nine donors of the patient's type for each experiment, a correct diagnosis, an active process as far as can be established, the patient's physical condition and consent of the patient's family to the intervention. Attempts at detoxication of grave schizophrenic processes by "total transfusion" have during four years been possible in only four cases, one of paranoid dementia, one of hebephrenia and two of catatonia. No donors were from among the patients' relatives. The results seem to the author to indicate that at least in a considerable number of cases of schizophrenia the intoxication theory is probably correct, he says that the clarification in the second case to a marked degree upholds the theory, which is also supported by the results in the first and third cases. In the fourth case, in which the psychosis was resistant to the "total transfusion," there was marked reaction of the white blood corpuscles in the direction of proliferation of immature cell forms. When careful preparations are made and the operation is performed with the necessary technical skill, "total transfusion" in itself is regarded as apparently relatively safe.

Hospitaltidende, Copenhagen

So 1045 1076 (Sept. 21) 1937

Some Cranial Deformities in Children. M. Fog—p. 1045

*Changes in Serum Proteins in Patients with Venereal Lymphogranuloma (Nicholas Favre) and Genito-Anorectal Syndrome (O. Jersild). N. Jersild—p. 1059

Dextrose Studies. II. M. Nørn—p. 1069

Changes in Serum Proteins in Venereal Lymphogranuloma—Jersild examined fifty-five serums, the number of cases of venereal lymphogranuloma in Denmark being limited. He states that hyperproteinemia, increased sedimentation, a positive formol-gel reaction and a positive Takata reaction frequently appear in connection with venereal lymphogranuloma and rectal stricture when the infection is active (acute or chronic). In 86 per cent of the acute cases the relative globulin percentage was more than 40, in 53 per cent there was positive formol-gel reaction, in 55 per cent a positive Takata reaction. In 96 per cent of the chronic cases the relative globulin was more than 40, in 92 per cent there was positive formol-gel reaction and in 92 per cent a positive Takata reaction. When only a positive Frei reaction testified to an ended venereal lymphogranuloma infection, corresponding shifts in the serum were not found. Of 10,000 serums sent to the State Serum Institute, only twenty, or 2 per cent, showed a positive formol-gel reaction in less than three hours, of these two were from patients with rectal stricture, one from a patient with a disorder possibly due to an earlier venereal lymphogranuloma. Since protein changes in the serum are rare in Denmark a certain significance must be attached to them in the diagnosis of venereal lymphogranuloma. The changes in the serum proteins in venereal lymphogranuloma are perhaps an expression of a disorder in the reticulo-endothelial system. From the presence of abundant plasma cells in the affected tissue in venereal lymphogranuloma and other disturbances with hyperglobulinemia (multiple myelomas, kala-azar), this cell form presumably in some way plays a part in the serum changes, whether it occurs in the reticulo-endothelial system or on the side of the bone marrow.

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AMENORRHEA ITS CAUSATION AND TREATMENT

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This investigation of patients with amenorrhea is a continuation of our studies on oligomenorrhea, amenorrhea and sterility begun in 1931¹. Since our last publications the methods for determining the gonadotropic factors in both blood and urine have been improved². As far as treatment is concerned, pure estrogenic substances are now available in large dosage. In addition to gonadotropic substances from pregnancy urine or the placenta, which lack some of the properties of the adenohypophysis, physiologically potent gland preparations and their equivalent—the serum of pregnant mares—are now available. This permits a better evaluation of any prepituitary effects that might be obtained in our carefully controlled series of cases.

MATERIAL

The patients selected had suffered with amenorrhea for various periods and were of various ages. Intelligence, faithful carrying out of orders, ability and willingness to report as directed were of importance in the choice. In one instance the investigation covered 430 days. In only five cases were the studies continued for less than one entire month.

The total number of cases studied was twenty-seven. Of these, six were primary in which menstruation had never occurred and twenty-one secondary amenorrheas. The ages of the patients and the duration of amenorrhea are given in table 1.

CLINICAL CRITERIA

By all available clinical criteria determined as a routine before selecting the patient, including the secondary sex characters, basal metabolism, blood examinations, sellar x-ray films, Janney test for sugar

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Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Eighty-Eighth Annual Session of the American Medical Association, Atlantic City, N. J., June 10, 1937.

1. (a) Frank R. T. Role of the Female Sex Hormone. *J. A. M. A.* 97: 1852 (Dec. 19) 1931. (b) Sex Endocrine Factors in Blood and Urine in Health and Disease. *Glandular Physiology and Therapy*, chapter XVI. Chicago: American Medical Association, 1935. p. 219. *J. A. M. A.* 104: 1991 (June 1) 1935.

2. Salmon U. J. and Frank R. T. An Improved Method for Determination of the Gonadotropic Hormone. *Proc. Soc. Exper. Biol. & Med.* 32: 236 1935. Frank R. T., Salmon U. J. and Friedman R. Determination of Luteinizing and Follicle-Stimulating Principles in Castor and Menopausal Urine. *ibid.* 32: 1666 1935.

tolerance, blood pressure, pelvic examination, and the like, twenty-four of the twenty-seven patients showed no serious deviations from any group of normal women of similar economic and social status. Included are private patients, housewives of all strata and single women of the leisure and working classes. In the great majority the sole complaint was the amenorrhea. A few complained of flushes,³ others of breast engorgement, a few of unrelated, mainly nervous, symptoms. The three other patients had hirsuties and two of these large clitorides.

LABORATORY STUDIES

Complete estrogenic determinations, extending at least over one month, were made on twenty-one patients. In several, these determinations were repeated. In ten, both estrogenic and gonadotropic determinations were made, including weekly blood specimens for the determination of both the estrogenic and the gonadotropic factors, as well as continuous urine examinations over thirty days of estrogenic and gonadotropic factors. In six, only estrogenic and gonadotropic blood determinations were made. In six, gonadotropic urine determinations were performed.

Our purpose in the laboratory study was to see how these women differed with regard to their hormones from the many norms previously determined by the same methods. Chart 1 shows the normal, fertile, menstruating woman. Another important graph to contrast with the group investigated is the one obtained from castrated or spontaneous menopause (chart 2).

In a previous paper from this laboratory^{1a} we classified amenorrheas into three groups, based mainly on the estrogenic assay. In the first group the blood curve showed a considerable diminution in the premenstrual rise, though occasionally an entirely normal graph was obtained. In a second group the blood was negative and the estrogenic excretion in the urine diminished. The third group was acyclic, neither blood nor urine showed more than a trace of estrogens. In the present investigation complete gonadotropic studies were simultaneously performed in similar groups of cases.

ESTROGENIC STUDIES

Twenty-one cases are available in which complete estrogenic examination of urine over one month was made. These have been subdivided into four groups.

(a) *Low (Acyclic)* (from 50 to 200 mouse units) — Of these, three cases were primary and four were secondary amenorrheas of from four to seven years' duration. In all of them the blood studies showed no estrogenic reaction in 40 cc of blood. The gonadotropic factor in the blood was high in two and negative in one. The gonadotropic factor appeared in the urine

3 The neurovascular symptoms usually associated with the menopause (flushes, sweats and the like) occur also not infrequently in normally menstruating young women of nervous temperament.

in very small quantities in 1 It was not determined in six This group, whose ages varied between 20 and 33 years, corresponds closely to the acyclic group, described in our previous studies (chart 3)

(b) *Subthreshold Estrogenic Urine Content* (from 500 to 850 mouse units) —There were five cases in this group in which from 565 to 850 mouse units of estrogenic substance was excreted during one month

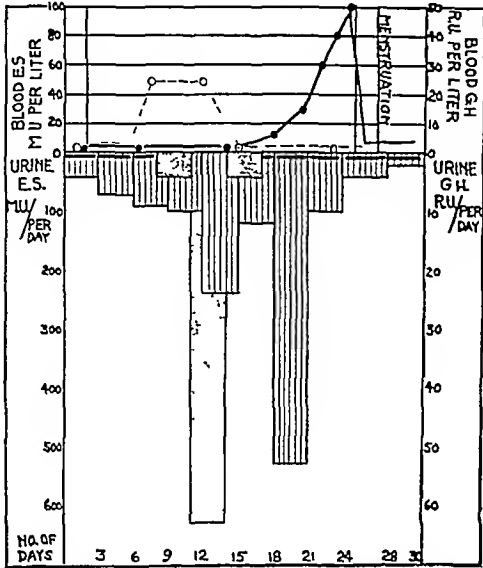


Chart 1—Gonadotropic and estrogenic hormones in the blood and urine cycle of a normal menstruating woman The explanation of the stippling and shading used in the charts is given in chart 2

Of these, two were primary and three were secondary amenorrheas, the durations being from two to nine years The patient who was amenorrheic for nine years had had two children before the onset of the amenorrhea

Of this group in two cases a blood reaction of plus 4 was demonstrated once during thirty days (see normal,

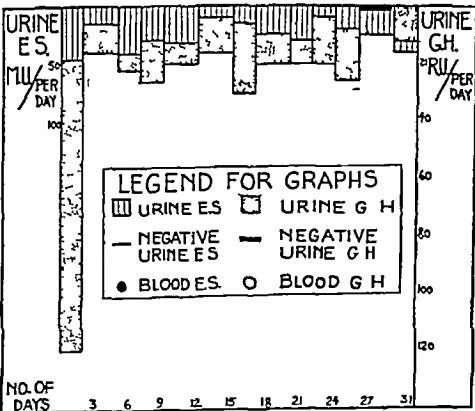


Chart 2—Total urine estrogenic output 637 mouse units in a woman aged 32 surgically castrated two months previously

chart 1) and both of these cases showed one rise of gonadotropic substance in the blood One of the five patients had a specimen showing gonadotropic substance in the urine and one other showed evidence of some accumulation in the blood

As a group these correspond to our subthreshold group of the previous investigations with some indication of a cycle The total monthly excretion of

estrogenic substance was equal to from one fourth to one half of the estrogenic substance found in a normal woman (chart 4)

(c) *Normal Estrogen Excretion* (from 1,000 to 1,714 mouse units) —In this group there were six cases, one primary and five secondary amenorrheas, with a duration of from one to seven years One of these patients had presumably aborted at an early stage four years previously

Two of the patients had a normal accumulation of estrogen in the blood, two showed a subthreshold accumulation, and two showed no cyclic estrogen in the blood Five of these cases were studied also for gonadotropic substance in the blood A reaction was obtained in two, one with a real increase Gonadotropic examination of the urine was made in only three cases, one being positive

An analysis of this group favors a disturbance of the cycle rather than evidence of low ovarian activity (charts 5 and 6)

(d) *Excessive Estrogenic Excretion* (from 2,075 to 2,328 mouse units) —There were three cases in this group, one primary and two secondary amenorrheas

TABLE 1—The Age of the Patients and Duration of Amenorrhea

Age	
From 20 to 30 years	18 cases
From 30 to 37 years	9 cases
Married	
(Of whom only 2 had shown signs of fertility The one had had 1 early abortion before onset of amenorrhea the other 2 children the last 7 years ago 16 were sterile the married life varying from months to 11 years 9 of the patients were single)	18
Duration of amenorrhea	
Less than 1 year	3
1 to 2 years	5
2 to 3 years	4
3 to 4 years	2
4 to 5 years	2
6 to 9 years	2
Primary	6
Ages of 3	23 years
1	30 years
2	33 years

of short duration—five and nine months respectively All three showed accumulation of estrogenic blood and one of these patients who had not menstruated for five months menstruated spontaneously ten days after the termination of the study This group falls into the type described by Zondek⁴ as the polyhormone group They appear to be much rarer in our series than was noted by Zondek (chart 7)

The quantity of estrogenic substance excreted in the urine is important in diagnosis and prognosis, and it has likewise been of use in evaluating the effects produced by various forms of therapy, as will be discussed later in this article Moreover, it has emphasized the importance of insisting on a continuous month's study because, in several instances, repeated specimens are consistently negative over from nine to twelve days and then considerable amounts, as much as from 400 to 600 mouse units, are excreted in the course of the next succeeding days Whether this sudden excretion corresponds to follicle ripening (or ovulation) and to the premenstrual increase of excretion must as yet remain unanswered (chart 8)

⁴ Zondek Bernhard Hormone des Ovariums und des Hypophysen-vorderlappens ed 2 Vienna Julius Springer 1935

That ovulation may occur during amenorrhea is proved by the following cases

A woman, aged 23, with primary amenorrhea, was observed by one of us recently. Although she had never menstruated and was without molimina, she conceived and required operation for ectopic gestation.

A woman, aged 33, a secundipara, whose last child was 7 years old, had been amenorrheic for fourteen months. When seen, the uterus was the size of a six weeks pregnancy, the Friedman test was positive, she carried through to term.

COMMENT ON ESTROGENIC EXCRETION

The low groups, namely, those with excretion of from 50 to 200 mouse units and from 500 to 850 mouse units in the course of thirty days, must be regarded as having diminished ovarian function. The increase of gonadotropic substance in both of these groups was not sufficiently distinctive to bespeak such diminution in ovarian function as may follow preponderance of the prepituitary activity similar to that which takes place in the menopause, nor, as will be referred to later, was the response to estrogenic therapy in these patients the same as in women in the menopause.

The third group, in which the estrogenic excretion was from 1,000 to 1,714 mouse units in a month,

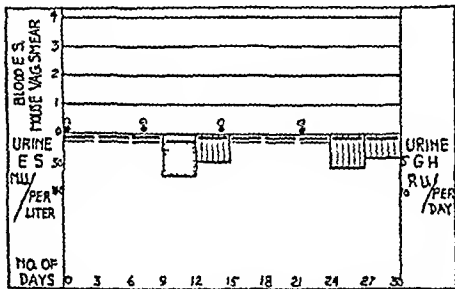


Chart 3—Primary amenorrhea in a single woman aged 23. The total estrogenic output in the urine was 136 mouse units.

parallels sufficiently closely the normal amount of excretion (from 1,300 to 1,700 mouse units in a cycle) to warrant the presumption that an approximately normal amount of ovarian activity was evidenced. Four of this group in addition showed a cyclic blood accumulation of estrogenic substances.

Consequently we conclude that some as yet unanalyzable disturbance in the cycle rather than merely low ovarian activity must at times be at fault. The gonadotropic studies did not help in clarifying or in showing that the pituitary is the primary factor, as seems most likely on theoretical grounds.

The last group with excessive estrogenic excretion (from 2,075 to 2,328 mouse units), all of whom had blood accumulation at one time of the study, are particularly puzzling. The sole explanation that we are willing to offer even tentatively is that ovarian overfunction might disturb the cycle analogously to the continuous absence of bleeding, which follows the administration of large amounts of estrogen to castrated

primates, not until the injections are stopped does menstruation occur. In one of the cases in this group, menstruation occurred spontaneously shortly after the completion of the study, but this has also happened in patients of the lower groups in our previously published studies. Whether the foregoing is the full and sole explanation is still to be decided.

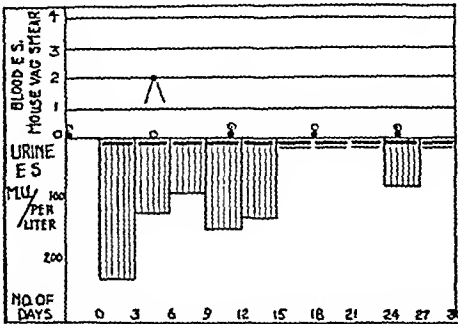


Chart 4—Primary amenorrhea in a single woman aged 23. The total estrogenic output in the urine was 851 mouse units.

Numerous and repeated assays performed with crystalline ketohydroxyestrin on large groups of castrated mice from our colony at various times during the course of the study show that our mouse unit lies between 0.8 and 0.9 microgram (the international unit equals 1 microgram).

GONADOTROPIC STUDIES

In the gonadotropic studies of the blood and urine, in which the follicle stimulating and lutemizing effect on immature rats was assayed, two groups were noted. In the one continuous and excessive secretion and excretion were observed, in the other the gonadotropic factors were found absent throughout.

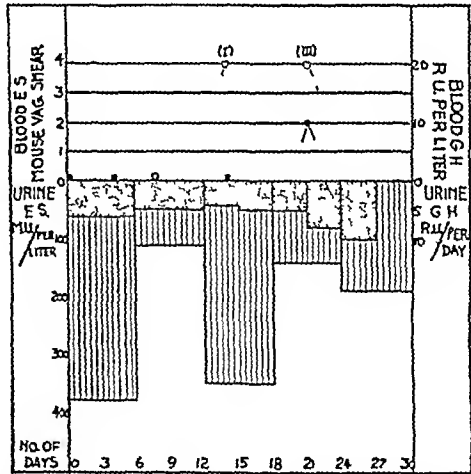


Chart 5—Secondary amenorrhea in a woman aged 34 married five years with no pregnancies, whose last menstrual period was three years before. The total estrogenic output in the urine was 1,166 mouse units.

High and Continuous Gonadotropic Excretion (four cases, all of secondary amenorrhea).—All these patients showed continuous and persistent gonadotropic excretion. One was observed at frequent intervals for more than one year (chart 9). The daily amounts

7. Allen Edgar. Further Experiments with an Ovarian Hormone in the Ovariectomized Adult Monkey, *Macacus Rhesus*. Especially the Degenerative Phase of the Experimental Menstrual Cycle. *Am J Anat.* 42: 467 (Nov.) 1928.

8. Marrian (Cohen, S. L., Marrian, G. F. and Odell, A. D.). Oestrial Glucuronide. *Biochem. J.* 30: 2250 (Dec.) 1936. Has raised the question of whether a difference in physiologic phenomena may result depending on whether the excreted estrogens are free or combined (glucuronic esters). His studies were limited to pregnant patients. In an as yet unreported series of normal women as well as in our amenorrheic patients less than 1 per cent of the free estrogenic factor was found.

averaged from 5 to 10 rat units. This differs markedly from the normal menstruating woman and resembles hormone conditions of the menopause (chart 2).

The estrogenic study of these patients showed, and this appears to be a fortunate accident, that they fall into one of each of the previously described categories, their monthly excretion of estrogens having been found to be respectively 75, 565, 1,166 and 2,328 mouse units.

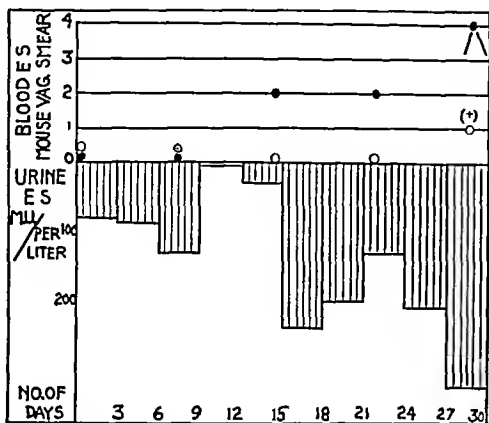


Chart 6—Secondary amenorrhea in a woman aged 26 married four years with one pregnancy (aborted four years before) the last menstrual period was four years before. Total estrogenic output in the urine was 1,415 mouse units.

Absent Gonadotropic Excretion (six cases, four primary, two secondary)—Theoretically these would conform more closely to the accepted concept of amenorrhea, namely, diminished gonadotropic function and consequent afuction of the ovaries, were it not for the fact that one of this group excreted large amounts of estrogen and two approximately normal quantities. The amount of estrogenic substance excreted by these cases is given in table 2.

Just as an analysis of the estrogenic factor fails to offer a complete explanation of amenorrhea, the same holds true of the gonadotropic study. In immature animals, injection of sufficient amounts of gonadotropic factors (A. P. L.—anterior pituitary extract from placenta [Collip], extract of pregnant mares' serum

TABLE 2—Estrogenic Substance Excreted

Low	{ 115 M U 136 M U	Normal	{ 1064 M U 1714 M U
Medium	{ 841 M U 910 M U	High	2185 M U

[Upjohn], or extract of the pituitary gland [Parke, Davis]) produces follicle stimulation, ovulation and luteinization with the well known correlated changes in the uterus. Whether the presence of the adult ovary can interfere with this reaction has not been established. That the adult rodent ovary can be forced to react to these stimuli, even in pregnancy, is shown when pregnant rabbits are injected with pregnancy urine.⁹

Our studies show that both when the gonadotropic factor is in excess and when it is deficient, estrogenic secretion can be diminished, normal or excessive. The two clinical cases previously described demonstrate that ovulation and impregnation may take place during amenorrhea. May not some other temporary, uterine retractormess to bleeding be at fault?

⁹ New manner of injecting in addition to the corpora lutea already present.

THERAPY

Use of Estrogenic Substances—Seven of the cases studied and referred to in previous paragraphs were selected for estrogenic therapy. The estrogens were given in the form of progynon-B (estradiol benzoate hypodermically, or progynon-DH (estradiol) by mouth.⁹

The dosage of estrogens given varied between 16,000 rat units (corresponding to 80,000 international units) and 690,000 rat units (corresponding to 3,450,000 international units) as total dosages. From these studies it is evident that primary and secondary amenorrheas respond or fail to react approximately in the same fashion. It soon appeared that amenorrheas react entirely differently to the estrogenic substances than do patients in the menopause who respond irrespective as to whether the menopause is spontaneous or is due to surgical castration or to x-ray castration. The menopause group shows not only a rapid disappearance of excessive gonadotropic substance from the circulation and the urinary excretion but also rapid disappearance of the symptoms. No effect whatever was noted in the amenorrhea groups between the dosage of 16,000 and 135,000 rat units with one exception, not investigated as to hormones.

This is in sharp contrast with three private patients of the senior author who, to alleviate menopause symptoms, took progynon-DH (1,800 "active biological units" [27 mg.] daily) continuously for several months (this included two patients with spontaneous menopause and one woman, aged 40, who was castrated by means of x-rays). From four to six days after stopping medication, these women were surprised and alarmed by the appearance of profuse uterine bleeding, which did not recur.

In our studies we found that at least 200,000 rat units (1 million international units) were necessary to reduce the excessive excretion of gonadotropic hor-

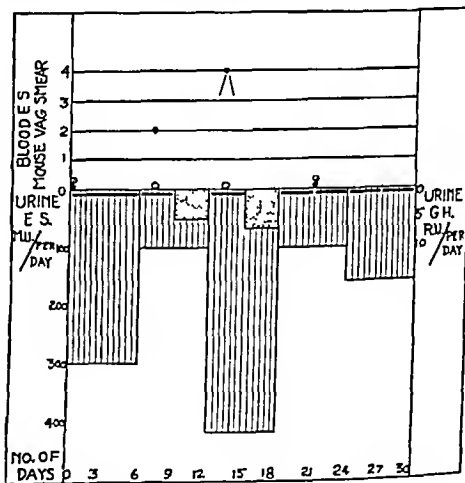


Chart 7—Primary amenorrhea in a woman aged 30 married 16 years with no pregnancies. The total estrogenic output in the urine was 2185 mouse units.

none, while in one case 400,000 rat units failed to produce this change. Artificial menstruation occurred in only two cases, in the one with 600,000 and in the other with 200,000 rat units. One patient who received 690,000 rat units, another 400,000 rat units, showed no

⁹ Drs. Gregory Stragnell and Erwin Schwenk of the Schering Corporation of Bloomfield, N. J. extended many courtesies and supplied large quantities of material used in these and other experiments.

response of any kind. One who received 400,000 rat units and another 135,000 rat units spotted slightly for a few days. In the few instances in which uterine suction biopsies were performed, slight interval activation of the endometrium could be noted.

Chart 9 shows strikingly the huge amounts of estrogen necessary to reduce gonadotropic overexcretion. This patient was studied with short intervals of rest for more than one year.

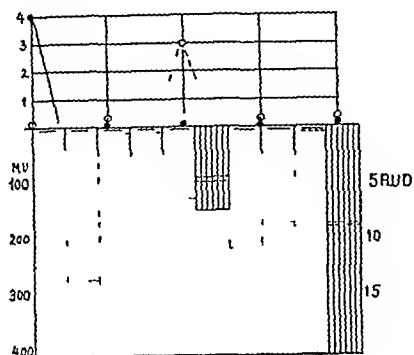


Chart 8—Secondary amenorrhea in a woman, aged 33, married eleven years, with two children the last seven years ago. The last menstrual period occurred four years ago. Total estrogenic output 565 mouse units in two periods of excretion with intervals of fifteen and nine days without estrogenic excretion. Gonadotropic excretion continuous.

The effects obtained differ to a considerable extent from those reported in the literature.¹⁰ We must emphasize particularly that no evidence of periodicity developed in our cases even when such courses of treatment as those described were repeated at intervals. This is not at all surprising when the slight effect on the excessive gonadotropic secretion and excretion, if present, produced by huge doses is taken into account.

The sole exception is a private patient of one of us (U. J. S.) not studied with regard to hormones, in whom periodic and descending doses of estrogen (progynon B, hypodermically) produced menstruation.

This woman, aged 24, weighing 240 pounds (109 Kg.), and who never dieted, with a basal metabolic rate of 2 per cent, hirsute, never gravid amenorrheic for fourteen months, was observed for more than 320 days. As can be seen from chart 10, 247,000, 50,000, 82,000 and 32,000 rat units were injected. Each injection was followed by bleeding. She bled for three days spontaneously after the elapse of sixty-five days but has not bled since then (fifty-six days).

Use of Gonadotropic Substances.—Four cases of both primary and secondary amenorrhea were tested at varying intervals, with different dosages of concentrated pregnant mare serum, containing gonadotropic substances.¹¹ Both primary and secondary amenorrheas were included in this group. The dosages given, according to Upjohn Company units, were from 60 to 510 rat units. Each Upjohn unit corresponds to at least 3 of our units as determined by us on our immature rats. Our unit is based on the minimum dose which produces ovarian luteinization. In no instance did menstruation follow the treatments.¹² No periodicity could be obtained by giving various doses at intervals of two or four weeks.

10 Mazer Charles and Irael S. L. Studies on the Optimal Dosage of Estrogens. An Experimental and Clinical Evaluation. J. A. M. A. 108: 163 (Jan. 16) 1937.

11 Dr. Cartland of the Upjohn Company, Kalamazoo, Mich., supplied us with the tablets containing the gonadotropic substances used in these experiments. They were prepared solely for experimental trial.

12 Before using this gonadotropic concentrate each patient was tested for sensitivity to horse serum. In none of those treated was an allergic response noted but without this precaution serious consequences might arise.

The use of unfractionated anterior pituitary extract (antuitrin)¹³ prepared from animal pituitaries proved equally ineffective.

We are, of course, well aware that gonadotropic preparations are as yet not sufficiently purified and concentrated to warrant drawing final conclusions as to their efficacy.

Nonspecific Treatment.—From these disappointing results it would appear that both primary and secondary amenorrheas, for which no causation could be discovered, react quite differently from the large group of amenorrheas seen in our endocrine clinic which follow the development of obesity, malnutrition or thyroid deficiency.

Obesity. In this group we have patients whose weight reaches to 300 or more pounds (136 Kg.). The basal metabolism of these patients is studied (the majority prove normal), the sella turcica is roentgenographed to exclude pituitary tumor, and a sugar tolerance test and other tests are made. Examinations, with the fewest exceptions, are negative. When such patients are put on a low caloric diet by cutting down carbohydrate and fats and being given sufficient protein, until the weight has been reduced, menstruation regularly supervenes and continues.

Malnutrition. Another group, almost as numerous since the economic depression, are the adolescents whose home surroundings prevent them from obtaining adequate nourishment. As soon as these patients, with the aid of social agencies, are given a liberal nutritious diet, fresh air and better surroundings, their menstruation likewise returns and becomes normal.

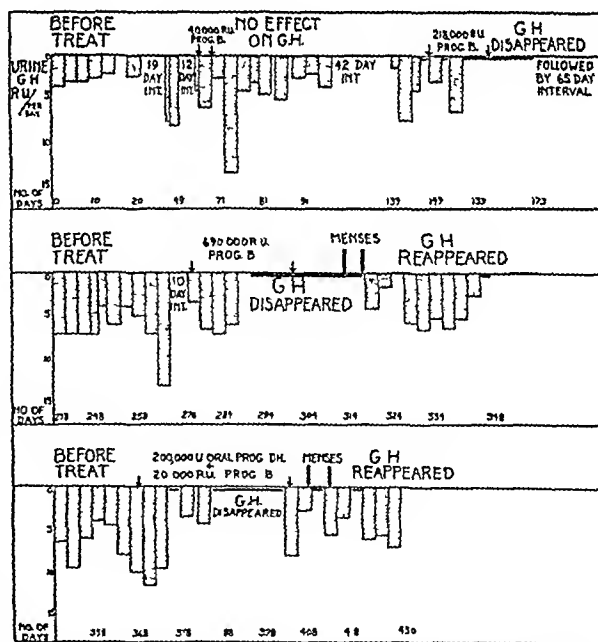


Chart 9—Secondary amenorrhea in a woman aged 20 single whose last menstrual period occurred four years before. Study of gonadotropic hormones.

A very interesting group is that of voluntary starvation, sometimes called "anorexia nervosa" of which we have observed three instances. The diagnosis previously made on all of these patients had been Simmonds' disease. They were all young adults and in every case resentment against parents and "too much

13 The Research Laboratories of Parke, Davis & Co. supplied this preparation.

family" caused the loss of appetite and increasing refusal of food. One of these women was submitted to a month's study of blood and urine and fell under the heading of "low excretion" of estrogen. These patients required nothing but hospitalization for several weeks, with complete separation from their families, to overcome the psychic factor, and all three rapidly regained full health with return and persistence of normal menstruation.

Thyroid Deficiency Thyroid deficiency in some patients, as previously described,¹⁴ is sometimes, particularly in the puberty group, followed by menorrhagia. In the majority of cases, however, amenorrhea supervenes. The nutrition of these patients is usually normal. Their basal metabolic rate is found to be between —20 and —35 per cent. The amenorrhea is of variable duration. The response to appropriate thyroid medication by mouth is startlingly uniform and successful. Usually thyroid substitution must be continued indefinitely.

Spontaneous Return of Menstruation—Final and convincing analysis of the factors causing amenorrhea is made still more difficult by the not infrequent spontaneous reappearance of normal menstruation without treatment. One such case (polyhormonal) was observed at the termination of the month's study. Previously

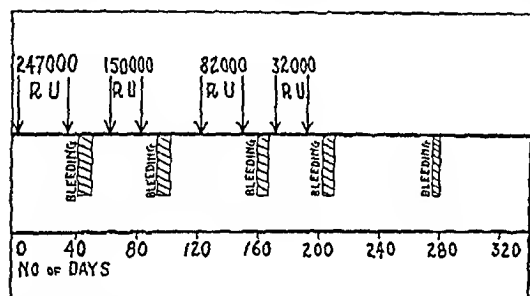


Chart 10—Secondary amenorrhea in a woman of 24, of fourteen months duration, weight 240 pounds (109 Kg). This patient menstruated after decreasing doses of estrogenic substances were given at intervals.

we have encountered seven such cases, in which, during or following the blood study, the amenorrhea disappeared. In all these increase of blood estrogen to plus 4 as in the normal (chart 1) was noted (previous amenorrhea from two to seven years). One patient had remained amenorrheic and sterile for seventeen years. She then menstruated and bore two children.

In this connection no mention has been made of amenorrhea developing during the course of serious and diagnosticable endocrine disease such as pituitary tumor, Addison's disease and adrenal cortical carcinoma. Such cases will be discussed in another article. The patients described in this study all fall into the group of functional disturbances.

SUMMARY

1 Of twenty-seven amenorrheic patients investigated, both primary and secondary, five were studied for less than one month, the remainder for from one month to more than one year.

2 The ages varied from 20 to 37 years. Of the eighteen married patients sixteen were sterile.

3 The amenorrhea had existed for from five months to nine years in the secondary group, the primary group (six patients) were from 23 to 33 years of age.

4 Twenty-four of the patients showed no endocrine stigmas, three had hirsuties and of these two had enlarged clitorides.

5 In twenty-one cases complete studies of the urinary excretion of estrogens were performed for more than one month. The patients fall into four groups.

(a) *Low* from 50 to 100 mouse units total monthly excretion. There was no positive estrogenic reaction in 40 cc of blood in any. Seven cases.

(b) *Subthreshold* from 500 to 518 mouse units excretion, two showed estrogen in blood. Five cases.

(c) *Normal Excretion* from 1,000 to 1,714 mouse units. Four showed some estrogen in blood. Six cases.

(d) *Excessive Excretion* from 2,075 to 2,328 mouse units. All showed estrogen in blood. In our series this group (Zondek's "polyhormonal amenorrhea") is less numerous than anticipated.

6 In ten cases complete studies of the urinary excretion of gonadotropic substances were performed for one month or more. These patients fall into two groups.

(a) *High and Continuous Gonadotropic Excretion*—Four cases. All four estrogenic groups were represented (see 5 a, b, c, d).

(b) *Absent Gonadotropic Excretion*—Six cases. Again all four estrogenic groups were represented.

The gonadotropic blood and urine studies cannot be correlated to the estrogenic conditions, thus differing both from normal women in whom the blood and urine show preovulatory accumulation and from patients in the menopause in whom blood and urine show continuous and increased amount of gonadogens.

7 The doses of estrogen given for therapeutic effect to amenorrheic patients varied between 16,000 and 690,000 rat units (80,000 and 3,450,000 international units). Below 200,000 rat units no response obtained. Even with the large doses employed a single uterine bleeding followed in only two and scant spotting in two. Approximately one tenth of the estrogen given is excreted in the urine.

8 Gonadotropic substances (extract of pregnant mare's serum, anterior pituitary gland extract) in dosage of from 60 to 510 rat units produced no effect.

9 In contrast to the foregoing groups were patients afflicted with obesity, malnutrition and hypothyroidism, who uniformly responded to appropriate therapy.

10 Finally, attention is drawn to the considerable number of patients in whom menstruation returns with out any treatment or ascertainable cause.

CONCLUSIONS

In amenorrheic women a wide variation in the hormone status occurs.

Evidence of almost complete ovarian afuction, subthreshold function and normal follicular activity as well as excessive activity are represented.

In these four groups the gonadotropic assay may show either overfunction or underfunction.

No evidence pointing to either a primary pituitary or a primary ovarian causation of amenorrhea could be demonstrated.

Amenorrhea does not preclude the occurrence of ovulation or pregnancy.

The response to estrogenic therapy of amenorrheic patients differs markedly from that in the menopause.

The threshold of response in amenorrhea is far higher than in the menopause.

This difference can be utilized in patients to differentiate between the two conditions, if an excess of gonadotropic substance has been found in the urine. Disappearance of gonadotropic substance produced by 30,000 rat units of estrogenic substance warrants the diagnosis of menopause.

No useful purpose is served in prescribing estrogens for the treatment of amenorrhea.

In the dosage used by us, gonadotropic preparations likewise proved ineffective.

It is justifiable to try very high dosage of gonadotropic preparations when these become available.

Our study has failed to locate the cause or causes producing amenorrhea.

Not only ovarian or anterior pituitary refractormess but also a failure of uterine response must be considered in the etiology.

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THE TREATMENT OF MENORRHAGIA AND METRORRHAGIA BY ENDOCRINE PRODUCTS

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Menorrhagia and metrorrhagia are among the most interesting complaints confronting the gynecologist. They result from a variety of both organic and functional diseases. In the latter, endocrine products are useful, in the former, they have no place. In any discussion of the treatment of abnormal uterine bleeding, one must remember that bleeding is only a symptom and that it can result from various causes. An adequate diagnosis is a prerequisite to rational therapy. It is our purpose in this paper to present certain observations concerning the etiology of functional uterine bleeding and the rôle of endocrine products in the treatment of menorrhagia and metrorrhagia.

Two lines of study have contributed to this progress. On the one hand, a combination of clinical and pathologic observations has established the relationship of the symptoms to the microscopic appearance of the endometrium. On the other hand, the experimental reproduction of the endometrial changes has enabled us to obtain information concerning the relationship of these symptoms to the organism as a whole.

The most striking form of functional menorrhagia and metrorrhagia is found in association with glandular cystic hyperplasia of the endometrium, and studies of this condition have led to an understanding of the disorders of menstrual interval and flow.

Schroeder¹ was the first to emphasize the correlation between endometrial hyperplasia and ovarian changes characterized by the absence of the corpus luteum and the presence of follicle cysts. These observations have been repeatedly confirmed by others. However, only

after the ovary had been shown to elaborate the specific substances estrogen² and progesterone³ was it possible to attack the hyperplasia problem by experimental means. Castrated rodents,⁴ monkeys⁵ and human beings⁶ were injected with estrogenic substances over long periods of time, and in all cases the typical histology of glandular cystic hyperplasia was produced.

Since partial castration in rodents had previously been shown to produce a disordered estrous cycle,⁷ and since the ovarian studies by Schroeder¹ and others⁸ indicated a deficiency of ovarian function, it seemed probable that endometrial hyperplasia could be produced by partial ovarian destruction. Accordingly, a group of partially castrated rodents was studied, with illuminating results.⁹ Some of these showed no alteration in either the estrous cycle or the microscopic appearance of the endometrium. Others showed prolonged stages of estrus with endometrial changes typical of glandular cystic hyperplasia. In still others there were few or no estrous cycles and an endometrium that was atrophic.

The next step was to investigate the effect of hypophyseal deficiency on ovarian function and endometrial response. A group of animals was partially hypophysectomized and showed the same responses that were observed in the partially castrated group.¹⁰ From these experiments one is forced to conclude that glandular cystic hyperplasia of the endometrium is not a disease but a clinical-pathologic symptom complex referable to at least two glandular disturbances and is only one of a number of such symptom complexes which result from them. Clinical studies have greatly extended this concept. In studying the endometrium of patients with menorrhagia and metrorrhagia by the serial biopsy technique¹¹ one finds many instances of bleeding originating in an endometrium showing clear-cut evidence of the action of estrogen and progesterone. At some subsequent period the same patient's endometrium may show a clear-cut endometrial hyperplasia. Likewise, cases of endometrial hyperplasia are seen which at some subsequent time show an endometrial atrophy.

2 Frank R T. The Female Sex Hormone. Springfield, Ill. Charles C Thomas Publishing Company 1929. Allen Edgar Byron, F F Robertson L L Colgate C E Johnston C G Doisy E A Kountz W B and Gibson H V. The Hormone of the Ovarian Follicle: Its Location and Action in Test Animals and Additional Points Bearing upon the Internal Secretion of the Ovary. *Am J Anat* 24 133 181 (Sept) 1924.

3 Allen W M and Corner G W. Physiology of the Corpus Luteum. III. Normal Growth and Implantation of the Embryos After Very Early Ablation of the Ovaries Under the Influence of Extracts of the Corpus Luteum. *Am J Physiol* 88 340 346 (March) 1929.

4 Burch J C Wolfe J M and Cunningham R S. Experiments on Endometrial Hyperplasia. *Endocrinology* 16 541 546 (Sept Oct) 1936. Parkes A S. Experimental Endometrial Hyperplasia. *Lancet* 1 485 (March 2) 1935. Tietze K. Die Follikelpersistenz mit glandulärer Hyperplasie des Endometriums in vergleichend pathologischer experimenteller und genetischer Beziehung. *Zschr f Geburtsk u Gynak* 108 79 1934.

5 Zuckerman S and Morse A H. Experimental Production of Excessive Endometrial Hyperplasia. *Surg, Gynec & Obst* 61 15 (July) 1935.

6 Werner A A and Collier W D. The Effects of Theelin Injections on Castrated Women. *J A M A* 100 633 (March 4) 1933. Production of Endometrial Growth in Castrated Women. *ibid* 101 1466 (Nov 4) 1933. Kaufmann C. Die Behandlung der Amenorrhoe mit hohen Dosen der Ovarialhormone. *Klin Wchenschr* 12 1557 (Oct 7) 1933.

7 Haterius H O. Vaginal Cornification and Ovarian Blood Supply. *Anat Rec* 47 318 1930.

8 Meyer R. Beiträge zur Lehre von der normalen und krankhaften Ovulation und der mit ihr in Beziehung gebrachten Vorgänge am Uterus. *Arch f Gynak* 113 259 1920. Fluhmann C F. Hyperplasia of the Endometrium and the Hormones of the Anterior Hypophysis and the Ovaries. *Surg, Gynec & Obst* 52 1051 (June) 1931.

9 (a) Wolfe J M Campbell Mary and Burch J C. Production of Experimental Endometrial Hyperplasia. *Proc Soc Exper Biol & Med* 28 1263 1265 (June) 1932. (b) Burch J C McClellan G S Johnson C D and Ellison E T. The Diagnosis and Classification of Menstrual Disorders. *J A M A* 105 96 100 (Jan 9) 1937.

10 Klingler H H and Burch J C. Suction in Obtaining Endometrial Biopsies. *J A M A* 99 559 (Aug 13) 1932.

From the Department of Obstetrics and Gynecology Vanderbilt University School of Medicine.

Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Eighty-Eighth Annual Session of the American Medical Association Atlantic City N J, June 10 1937.

1 Schroeder R. Beiträge zur normalen und pathologischen Anatomie des Endometriums. *Arch f Gynak* 88 81 1912.

In attempting to correlate the type of bleeding with the type of endometrium, one finds that no absolute relationship exists. There is, however, a tendency for the minor disorders to occur in cases showing a more or less normal endometrium, indicating a first degree ovarian failure. The severe bleedings usually occur from an endometrium characteristic of glandular cystic hyperplasia, indicating a second degree ovarian failure. Bleeding as well as amenorrhea is found in cases presenting an atrophic endometrium, indicating a third degree ovarian failure.¹⁰

Whatever the degree of ovarian failure, a careful examination of the patient will usually reveal evidence of some endocrine disturbance. The most common offenders are the pituitary, the thyroid and the ovary. Associated with the endocrine lesion one often finds such other conditions as anemia, focal infections, nutritional disturbances and nervous conditions.¹¹

Functional menorrhagia and metrorrhagia, therefore, are symptoms of an ovarian disturbance, either primary or secondary to diseases of the pituitary or thyroid, or secondary to some constitutional disease affecting one or more components of the endocrine system. The microscopic appearance of the endometrium is the indicator of the severity of the disturbance in ovarian function.

In any discussion of the use of endocrine products in the treatment of menorrhagia and metrorrhagia, one is faced with a difficult task, since these symptoms occur in a variety of disorders. It is beyond the scope of a single paper to discuss all possible applications in the treatment of disease. Therefore only the general principles governing their use are outlined.

The first and most important principle in the treatment of menorrhagia and metrorrhagia with endocrine products is that an accurate diagnosis is essential.¹² The underlying endocrine condition, as well as the general constitutional state of the patient, is determined.¹³ The degree of ovarian deficiency can be estimated from a study of the endometrium.

The second principle is the treatment of the existing endocrine lesions with specific measures. The most satisfactory results are obtained in hypothyroidism. A standard thyroid preparation is selected and administered in all such cases, thereby eliminating difficulties arising from variations in the strength of various extracts. In our experience it has been best to start with from one-half to three-fourths grain (0.03 to 0.05 Gm) of U. S. P. desiccated thyroid daily. After a period of two weeks, the dose is adjusted according to the patient's response. The adjusted dose is given for two weeks and the procedure repeated. The basal metabolism is determined at the end of six weeks and the dose of thyroid is increased until the metabolism is at or near normal, or until undesirable symptoms occur. If such symptoms do occur, the dose is reduced to the level at which the greatest effect can be obtained with the least undesirable reaction.

Any of the accepted gonadotropic products of pregnancy urine or of the placenta¹⁴ are useful in the treatment of abnormal uterine bleeding resulting from hypothyroidism. Their effect, however, is transient,

since the underlying hypothyroidism is not permanently influenced by their use. In primary ovarian disease the preparations are extremely valuable, since direct stimulation of the ovary is produced.¹⁵ While the patient is bleeding, from 100 to 500 rat units of the gonadotropic substance may be administered daily until the bleeding ceases. This should be followed by weekly injections of from 200 to 500 rat units. If it is impossible for the patient to be seen at frequent intervals, single massive doses are often effective.

Progesterone therapy for the direct replacement of ovarian insufficiency due to absent or abnormal corpus luteum would seem to have much to offer. Several recent articles reporting successful treatment have appeared.¹⁶ Effective therapy with a few injections of from $\frac{1}{25}$ to $\frac{1}{5}$ international unit (0.04 to 0.2 mg) has been reported.^{16b} Until recently its use has not been extensive, owing to the expense and difficulty of securing potent extracts. What its ultimate place will be in the treatment of abnormal uterine bleeding remains to be seen. It is to be remembered, in consideration of this form of therapy, that menorrhagia is at times present when there is evidence of ample progesterone secretion and, on the other hand, is often present in the absence of progesterone secretion. Factors other than progesterone, therefore, exert a profound influence on uterine bleeding.

In pituitary disorders there is often, in addition to the direct lack of pituitary secretion, a failure of the thyroid and ovary. Pituitary preparations in the form of desiccated whole pituitary substance (60 grains, or 4 Gm, a day) or one of the injectable preparations containing the essential anterior pituitary principles (100 units daily) are used. These preparations are often not effective alone. In such instances small doses of desiccated thyroid, an estrogen or gonadotropic substance may be necessary as supplemental therapy.

The third principle in the treatment of menorrhagia and metrorrhagia with endocrine products is the eradication of factors contributory to the primary disorder. Foci of infection should be diligently sought and treated. The body weight should always be adjusted to the normal. Any anemia should be corrected. Snake venom is often effective as a stopgap,¹⁷ its hemostatic action allows the correction of anemia and gives an opportunity for other measures to take effect. The diet should be made adequate, especially in proteins and accessory substances, and rest and sleep should be emphasized. Neglect of this third principle is a frequent cause of poor results from good endocrine products.

The final principle in the treatment of menorrhagia and metrorrhagia with endocrine products is the realization that surgery and irradiation produce only a symptomatic cure.¹⁸ They still have a definite and important place in treatment. But it must be remembered that the underlying pathologic condition is still

11. Rich H. P. The Visceral Nervous System and Its Relation to the Endocrine. *J. A. M. A.* 108:28 (Jan. 23) 1937.
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16. (a) Engle E. T., Smith P. E. and Slesesnyak M. C. The Role of Estrin and Progesterin in Experimental Menstruation. *Am. J. Obst. & Gynec.* 29:787 (June) 1935. (b) Wilson K. M. and Elden C. A. Some Points in the Treatment of Endometrial Hyperplasia by Progesterone Therapy. *ibid.* 32:194 (Aug.) 1936. (c) Wiesbader H. Engle E. T. and Smith P. E. Menstrual Bleeding After Corpus Luteum Excision Followed by Estrin or Progesterin Therapy. *ibid.* 32:1039 (Dec.) 1936.

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present and usually demands further treatment. Neglect of this final principle has been almost universal, and every gynecologist has patients who are cured of their menstrual disorder but who still have their primary disease.

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THE ENDOCRINES IN RELATION TO STERILITY AND ABORTION

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The endocrines govern the physiology of reproduction from beginning to end, spermatogenesis, oogenesis, maturation of the ovum, ovulation, fertilization, preparation of the endometrium for nidation, implantation of the fertilized ovum, placentation, maintenance of pregnancy, development of the fetus, birth and lactation—all are dependent on hormones initiated and controlled by the anterior hypophysis.

The definite suspicion that something in the blood accounted for the phenomena which occurred when the ovaries were removed and a return to normal followed transplantation of ovarian tissue—this was the real inception, even if not the first hint, of the endocrine idea. Then the search for the mysterious substance began, fruitless as to conclusions for many years but very rich in laying the foundations for our knowledge, limited though it is, of the physiology of reproduction.

One needs only to mention a few who placed stones in this foundation which made the recent great advancements possible, and to remind oneself how important pioneer work is. Fraenkel¹ and his corpus luteum experiments, Hitchmann and Adler² with their rediscovery of the cycles of the endometrium, Meyer³ and Schroeder,⁴ who helped to establish the concomitant cycles of ovary and endometrium, Stockard and Papanicolaou,⁵ whose discovery of the cyclic changes in the vagina of lower animals still more firmly established the synchronicity of the ovarian and endometrial cycles and the control of the latter by the former and greatly fostered animal and human endocrine research.

Knowledge began to crystallize when Robert Frank⁶ in 1922 and Allen and Doisy⁷ in 1923 independently demonstrated the hormone activity of the follicle fluid. The pursuit of the elusive factor seemed accomplished, but there was yet another to come, which Novak⁸ and others had predicted, because the microscopic appearance of the endometrium indicated that there should be some principle, probably from the corpus luteum, which would complete the ripening of the endometrium into the progestational phase, to them the endometrial picture seemed incomplete. Their prediction came true when Corner and Allen⁹ in 1928 extracted from the corpus luteum of rabbits a substance which they called "progestin." "This had exactly the effects presupposed

for it."⁸ Now four hormones were known, for Smith and Engle¹⁰ in the United States and Aschheim and Zondek¹¹ in Germany in 1927 had completed the chain of glands immediately involved in the female physiology of reproduction and demonstrated the dominant rôle of the anterior hypophysis in the reproductive system. This predominance of the gonadotropic principle on the endometrium, through the agency of the estrogenic substances of the ovary, is too familiar to require repetition. However, there are two other active principles found in the urine similar in their action to the gonadotropic principles of the hypophysis, the gonadotropic substances of pregnancy urine or of the placenta. These six hormones are the known factors concerned in the physiology of reproduction. However, their very complex mechanism still eludes complete solution, just enough to leave their therapeutic use very unsatisfactory.

Since all these endocrine forces are recognized, any failure, derangement or deficiency in this succession of endocrine events may result in sterility and abortion. Other glands have some influence on fertility, for example, the adrenals, the hypothalamus, the pancreas and particularly the thyroid.

I shall not have time to discuss their as yet rather obscure effects, with the exception of the thyroid, which is a very definite factor in the physiology of reproduction. Therefore, in the diagnosis of the causes of infertility, sterility and abortion, one must investigate the three glands most frequently involved—the pituitary, the ovaries and the thyroid—and the offending gland must be determined, which can usually be accomplished with reasonable accuracy by clinical data—the knowledge of the stigmas of the various endocrine types, the details of which have no place here but may be found in treatises on endocrinology, such as Frank's "The Female Hormone,"¹² in which will also be found the technique of laboratory tests for the active principles in the blood and urine.

Much has been learned about the physiology of reproduction, but it must be confessed that only the framework has been erected. Much material must yet be accumulated and put in place before the edifice can be completed. Therefore knowledge of the endocrine factors involved in sterility and abortion are truly scanty, as Novak⁸ has put it: "As a matter of fact, there are only a few aspects of the problem sufficiently crystallized to justify discussion." It is interesting, if not profitable, to consider a few of the functional disturbances usually accompanied by sterility.

FUNCTIONAL AMENORRHEA

When a woman has never menstruated, she usually has never ovulated and cannot conceive. There is no known way, as yet, of producing ovulation in women, such as can be done by injecting pregnancy urine in some lower animals. Amenorrhea, attended by sterility, is frequent in pituitary endocrinopathies. When uncertain of the diagnosis by clinical observation, hormone blood and sugar tolerance estimations, and x-ray examination of the sella turcica will often complete the necessary evidence.

When amenorrhea is incomplete or when there is oligomenorrhea, the ovary has demonstrated its ability

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2. Hitchmann and Adler, Monatsschr. f. Geburtsh. u. Gynak. 27: 1, 1904.
3. Meyer, Robert, Arch. f. Gynak. 93: 254, 1911.
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10. Smith, Philip and Engle, F. T., Am. J. Anat. 40: 159 (Nov.) 1927, Proc. Soc. Exper. Biol. & Med. 24: 561 (March) 1927.

11. Aschheim, Selmar and Zondek, Bernhard, Klin. Wochenschr. 6: 1322 (July 9) 1927.

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to ovulate, although inadequately. This type is quite apt to respond to treatment.

That the ovaries are sometimes primarily deficient is shown by a large amount of pituitary hormones, by laboratory tests, and by the absence of estrogen, a sure sign of ovarian hypofunction. Treatment by estrogenic substances is useless, for no endocrine gland is stimulated by its own product. Furthermore, the effect may be injurious. The gonads are not self-regulating, the seat of such control is in the hypophysis.¹³ Hypophysis products and the gonadotropic product of pregnancy urine or of the placenta have, in our hands, been very disappointing. We have had better results with thyroid, even when the basal metabolism is not markedly low.

Functional bleeding is usually accompanied by sterility because both the hemorrhage and the sterility are due to functional abnormality of the ovaries, which produces an excessive amount of estrone, causing a hyperplasia of the follicular phase of the endometrium and, on account of the failure of ovulation, no progesterational endometrium is formed. This usual explanation of the condition may have to be altered.

Burch, McClellan and Johnson,¹⁴ by animal experimentation and cannula curet biopsies of human endometrium, found three degrees of endometrial abnormality.

First, functional bleeding, usually moderate, with luteal endometrium.

Second, menorrhagia, with aluteal endometrium and cystic glandular hyperplasia.

Third, aluteal atrophic endometrium, with a tendency toward amenorrhea.

They concluded that the disorders of menstrual interval and flow are the result of ovarian underfunction, the severity of which is indicated by the state of the endometrium, and that the underfunction may be primarily ovarian or secondary to lesions in other endocrine glands.

Hamblen,¹⁵ reporting 358 consecutive endometrial biopsies from women with functional bleeding, found four different endometrial patterns, of which the vast majority were of the estrogenic stimulating type, but only 45 per cent showed the classic pattern of endometrial hyperplasia.

Evidently cannula curet biopsies are upsetting some former ideas, as careful research has a disconcerting way of doing.

The treatment must inevitably be adjusted to the type of endometrium found but, since cystic glandular hyperplasia is the predominant type, perhaps the use of progesterone will still remain the rational treatment. Gonadotropic substances in the past have given variable success, sometimes spectacular and the very next time an utter failure. I imagine that cases presenting a low basal metabolic rate will continue to give reasonable results.

ANOVLATORY MENSTRUATION

Menstruation without ovulation was called to the attention of the profession by Corner¹⁶ and Hartman¹⁷ by their discovery that at certain times monkeys menstruated without ovulation. Novak and many others have demonstrated by means of the cannula curet that the endometrium of some women show no progester-

tional changes, therefore these women have not ovulated and of course cannot conceive.

There is no treatment at present.

Habitual abortion and sterility are closely allied because the same endocrine factors are involved. The influences vary from normal, through low fertility, to sterility. When a woman of low fertility conceives, the endocrine factors that preserve the pregnancy—for example, progesterone from the corpus luteum of pregnancy—may be insufficient and she aborts, therefore treatment with progesterone is logical.

Bishop, Cook and Hampson¹⁸ found progesterone valuable in habitual and threatened abortion.

Krohn, Falls and Lackner¹⁹ reported nineteen cases treated with progesterone, of which 74 per cent were successful.

DEFECTIVE GERM PLASM

The confused state of the etiology of abortion assumed a more scientific aspect when His, and later Mall²⁰ and Streeter,²¹ found that embryologic defects—defective germ plasm—were frequent causes of fetal death and abortion. Mall thought it was caused by poor environment, i. e., a faulty endometrium and resultant improper nourishment. Robinson, on the other hand, thought the difficulty was inherent in the ovum itself because some ova were faulty and others perfect in litters of ferrets. Either theory is compatible with endocrine deficiencies.

ENDOCRINE TREATMENT OF STERILITY

With our present knowledge of the physiology of reproduction and the known dominance of the anterior hypophysis through the gonadotropic hormones, it would seem logical to employ preparations of them in most cases of sterility. One cannot be too critical of their use experimentally, but their exploitation is reprehensible and their indiscriminate use unwise.

Because of my own unsatisfactory results with the hypophysis extracts and the gonadotropic products I have made a searching review of the clinical reports in the literature, but I remain unimpressed, though hopeful.

Isolated reports of success are without value. Scientific statistical formulas cannot be applied to small series, and most reporters seem not to take into consideration the number of cases which spontaneously return to normal, which Frank emphasizes thus: "I have so often seen improvement or cures in amenorrhea and sterility, without any therapy, that I am fully convinced that therapeutic results, so frequently found in the literature, are accidental or coincidental."

Much, perhaps most, of the trouble is due to the gaps in our knowledge, which in due time will be filled, much is due to misinformation, much to credulity and much to overenthusiasm and uncritical use of endocrine products.

I am quite as critical of my own figures given here as I am of the figures of others. I realize that the cases reported are relatively small, too small to apply statistical formulas. They are given only as evidence and not as proof.

THE THYROID AND STERILITY

Since 1922 I have studied the relation of the basal metabolic rate to sterility, abortions and menstrual dis-

¹ M. R. C. R. Am J Obst & Gynec 29 1 (Jan) 1935 Novak
¹⁴ Burch J C McClellan G S Johnson C D and Ellison
F T The Diagnosis and Classification of Menstrual Disorders J A
M A 108 90 (Jan 9) 1937
¹⁵ Hamblen E C in discussion on Burch McClellan Johnson and
Ellison
¹⁶ Corner C W The Relation Between Menstruation and Ovula-
tion in the Monkey J A M A 89 1838 (Nov 26) 1927
¹⁷ Hartman Anat Rec 35 13 (March 25) 1927

¹⁸ Bishop P M F Cook F and Hampson A C Lan et 1
139 (Jan 19) 1935
¹⁹ Krohn L Falls F H and Lackner J E. Am J Obst &
Gynec 29 198 (Feb) 1935
²⁰ Mall Johns Hopkins Hosp Rep 9 1
²¹ Streeter Carnegie Institute of Washington Year Book 30 1930-
1931 p 15
²² Robin on Edinburgh M J 26 137 (March) 1921

turbances In our first small series of sixty-nine²³ consecutive sterile women, in whom no other evidence of myxedema was present, 50 per cent had a low basal rate, adding those who had conceived but aborted, the figure was 56 per cent Carefully supervised thyroid medication resulted in 33.3 per cent conception, 14 per cent of whom aborted One woman conceived three times under thyroid medication, bringing the percentage of conceptions to 40 In another group of 114 women, 45 per cent of the married women were sterile and 40 per cent of the entire group had functional disturbances of menstruation In a second series²⁴ of 137 women, approximately the same figures were obtained, but in addition we found that 63 per cent had abnormal menses (our patients all came from a goiter area)

Our third series (including the previous reports) consists of 255 married women, 49.7 per cent of whom were sterile Of 332 women, married and unmarried, 33.5 per cent had functional disturbances of menstruation During the fifteen years of our experience to date (including cases not previously reported) there was a consistent rate of conceptions of 30 per cent in women with low basal rates

Haines and Mussey of the Mayo Clinic²⁵ confirmed our thyroid treatment of functional menstrual disturbances, saying "Because of a desire to determine the effectiveness of thyroid medication alone, in the treatment of certain menstrual disturbances, no patient received any other treatment All were definitely improved, amenorrhea, 72 per cent, oligomenorrhea, 55 per cent, menorrhagia, 73 per cent, and general health, 75 per cent"

Also in this connection Haskins²⁶ says "Most gynecologists agree that thus far of all the gland products, thyroid has proved to be the most useful for a variety of endocrine disturbances, including amenorrhea, oligomenorrhea, menorrhagia, sterility and abortion"

Marine, long ago (1917) when there was scarcely any usable knowledge of the endocrines, declared "The relation of the thyroid to the sex organs in the female is the most frequent and classical illustration of the interrelation of the function of glands with internal secretions"

Frank adds testimony by saying "The sole endocrine preparation that has proved itself of real value has been thyroid extract, which is of use in patients with lowered basal metabolism"

Novak⁶ declared that thyroid medication in sterility and abortion are more often efficacious than any other form of organotherapy

Desiccated thyroid was the first, and is still one of the few successful, substitutional hormone preparations Perhaps when one gives desiccated thyroid one is doing to the ovaries what the pituitary has failed to do through stimulation of the thyroid gland by means of the thyrotropic hormone

I quote the concluding paragraph of an editorial in THE JOURNAL²⁷

These reflections [criticisms of the misuse of sex gland hormones] are not intended to inhibit chemical and biologic studies in accredited laboratories Neither do they apply

to the carefully controlled clinical application of accepted knowledge by competent observers, this is necessary Rather are they intended (1) to emphasize that there is a great discrepancy between laboratory knowledge of the hormones and their clinical application, (2) to suggest that for the present only those clinicians with facilities for critical study be encouraged to administer the newer endocrine preparations to patients and that these clinicians be urged to publish their negative as well as their positive results, and (3) to suggest that a large group of physicians not represented in either of the groups mentioned cease their indiscriminating injection of unknown substances into unsuspecting patients

Physicians are perhaps cynical because of our limited knowledge of the endocrines and the complexity that faces it, but the tendency is to optimism when it contemplates the accomplishments of the recent past with their great promise for the future

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ENDOCRINE TREATMENT OF VAGINITIS OF CHILDREN AND OF WOMEN AFTER THE MENOPAUSE

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AND
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In 1933 one of us (Lewis¹) showed that by administering estrogenic substance it was possible to change the thin vaginal mucosa of the child to that resembling the thick epidermis-like structure of the adult This change is a temporary one and subsides when treatment is withdrawn, with a reversion to the normal vaginal mucosa characteristic of childhood Together with the report of this observation were recorded eight cases of gonorrheal vaginitis in children, treated with estrogenic substance Most of these were treated with hypodermic injections of aqueous solutions of the principle In some, estrogen suppositories were used as adjuvants All were improved and some cured

Later we² reported that the building up of the vaginal mucosa in this way produced a strongly acid vaginal secretion like that of the adult menstruating woman Before puberty and after the cessation of ovarian activity the vaginal mucosa is a delicate thin structure with a so-called secretion, which is neutral or faintly acid During these years it is an easy prey to invasion by pathogenic bacteria, gonococci in particular Long ago Doderlein taught the important role that the acid vaginal secretion of the adult plays as a protection from infection Gonococci as well as many other organisms perish in vitro if the p_H of the medium on which they find themselves is lower than 6 In patients treated with estrogenic substance the vaginal acidity often drops to 5 or below When the hydrogen ion concentration is kept below 6 we usually fail to recover gonococci from vaginal smears or cultures In

E. R. Squibb & Sons gave us the large amounts of amniotin used in the treatment of the cases that we have reported

Drs. Benson, TeLinde and Mazer have permitted us to include in this paper some of their work that has not been published

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A grant from the Milbank Fund made possible the study carried on under the Department of Pediatrics of New York University Medical School in the Children's Medical Service of Bellevue Hospital Also facilities were extended to us by the Yale School of Medicine

¹ Lewis, R. M. *Am. J. Obst. & Gynec.* 20: 593 (Oct.) 1933
² Hall, B. V., and Lewis, R. M. *Endocrinology* 20: 210 (March) 1936
Lewis, R. M. and Weinstein, Louis. *Surg. Gynec. & Obst.* 63: 640 (Nov.) 1936

²³ Litzenberg, J. C. *Am. J. Obst. & Gynec.* 12: 706 (Nov.) 1926

²⁴ Litzenberg, J. C. and Carey, J. B. *Am. J. Obst. & Gynec.* 17: 550 (April) 1929

²⁵ Haines, S. F. and Mussey, R. D. *Certain Menstrual Disturbances*. J. A. M. A. 105: 55* (Aug. 24) 1935

²⁶ Haskins, H. D. *The Tides of Life*. New York: W. W. Norton Company

²⁷ Clinical Application of Hormones of Anterior Pituitary and Gonads. editorial. J. A. M. A. 107: 1390 (Oct. 24) 1936

short, we believe that the production of a marked vaginal acidity is an important adjunct in effecting cures in these cases

By treating a small series of children with gonorrheal vaginitis with quite large amounts of ethylene glycol amniotin hypodermically, we cured the disease in an average of 24.2 days. These results were confirmed by some clinics, although others did not meet with the same therapeutic success. Mazer and Israel⁵ reported good curative results using large amounts of estrogenic substance subcutaneously, but they noted also such by-effects as enlargements of the breast and rarely slight menstrual discharges.

Happily TeLinde and Brawner⁴ used vaginal suppositories of amniotin and at once obtained brilliant results, obtaining cure in seventeen successive cases of gonorrheal vaginitis. This method is very advantageous because it is not disturbing to the patient, can easily be administered by an intelligent mother and requires such small amounts of the substance that no undesirable effects are known to have occurred.

According to our own experience, treatment solely with vaginal suppositories as described by TeLinde and Brawner⁴ has proved vastly more simple and effective than the use of hypodermic or oral preparations. We shall here summarize our results in eighty-two cases of gonorrheal vaginitis in children treated only with amniotin suppositories in the Children's Medical Service of Bellevue Hospital, New York. The recent results of other clinics, furnished us in personal communications, are also included.

To be specific, this form of treatment consists in the insertion of a gelatin capsule containing 75 rat units of amniotin, or one half of an amniotin suppository, into the vagina each night at bedtime. (One half of a suppository contains 1,000 international units of estrogenic substance.) No douches are used, but at first the external genitalia may require cleansing if the discharge is profuse.

At the Bellevue Hospital we found that in 107 courses of such treatments the vaginal smears became negative (absence of pus and gonococci) on an average in twenty-four days. A few patients required many weeks before negative smears were obtained, on the other hand, some cleared up in a very few days. Satisfactory results require faithful daily treatment. Some of our patients required unduly long treatments because this fact was overlooked.

Of a total of eighty-two patients with gonorrheal vaginitis adequately treated with amniotin suppositories alone in the Children's Medical Service at Bellevue to April 15, 1937, two were not cured. The remaining eighty are apparently well. Twenty-nine have been cured for over one year, twenty-one for over six months and the other thirty have been apparently well (negative smears and the like) for from one to six months. One of the two uncured cases was puzzling because there was no physiologic response even after the administration of large amounts of the substance.

Together with others using this method of treatment we found that reinfections and recurrences were a serious problem. Twenty-five of our eighty patients returned from their homes again with vaginitis after having been apparently cured. We believe that most of these cases were reinfections. At least we know that in the homes of twelve of these children there

were other persons with gonorrhea. It seems probable that these patients reacquired infections from their original sources. One case recurred while the patient was in the hospital, but we have reason to believe that this was also a reinfection. These patients, when they returned, were cured by being treated as before with suppositories. It is of interest that patients treated a second time usually get well more quickly than do patients having their initial treatments. We believe that all patients should be under observation for at least one year after they are apparently cured. They should be kept from intimate contact with other girls for at least the first six months of this time. It seems unnecessary to add that, if the treatment with suppositories is unsuccessful, a careful investigation of the cervix, urethra and rectum must be made. We have found but few instances of persistent endocervical infection.

Mazer and Israel⁵ treated sixty cases of gonorrheal vaginitis with hypodermic injections of from 1,000 to 1,500 rat units of estradiol benzoate every other day for eight weeks. These cases showed the physiologic by-effects previously mentioned. In the sixty cases there were five recurrences. Mazer⁵ writes that he has now treated thirty-five children with vaginal suppositories containing estrogenic substance. Only sixteen of these have been treated long enough to permit a follow-up of from three to six months, but all were apparently cured and in only one case was there a recurrence. Mazer believes that all patients should be treated for at least eight weeks to insure against recurrence, and we agree with this policy.

Benson and Steer⁶ have reported the hypodermic treatment of eighty patients with different preparations of estrogenic substance. Sixty-six were apparently "cured" but in nearly all the condition recurred. In a later group of ninety-two cases Benson⁷ used amniotin capsules intravaginally for an average of twenty one days. Negative smears and apparent cures were obtained, but after the patients returned to their homes about one half were reinfected or the condition recurred. He observes⁶ that "an analysis of these cases would seem to indicate in general that those showing recurrence were the ones returned to unclean homes, while those that remained cured went back to clean homes or child caring institutions where there was no contact with infected cases." Benson believes also that apparent recurrences after discharge from the hospital are usually reinfections. Possibly longer treatment of these cases might have reduced the number of recurrences.

Richard W. TeLinde⁵ writes that in his clinic in Baltimore 140 cases of gonorrheal vaginitis have been successfully treated with amniotin suppositories. The first 100 have been reviewed. In this number the condition has recurred only twice or the patient has been reinfected, one six and one seven months after treatment was stopped.

The cost of the suppositories of estrogenic substance used in the average case is not excessive for the private patient (amounting as a rule to eight or ten dollars). Since only relatively small amounts of estrogenic substance are given by suppositories, it is our opinion that the treatment is not dangerous. No ill effects have been seen. However, we advise against the administration of large doses of estrogenic substance over a long period of

⁵ Personal communication to the authors.

⁶ Benson R. A. and Steer Arthur. Vaginitis of Children. *Am J Dis Child* 53: 806-824 (March) 1937.

⁷ Benson R. A. Reported at a meeting of the Regional Conference of Social Hygiene Feb. 3 1937 and by personal communication to the authors.

Mazer, Charles, and Israel, S. L. Studies on the Optimal Dosage of Ethylene Glycol Amniotin. *Am J Obst & Gynec* 30: 105-163 (Jan. 16) 1937.
⁴ TeLinde, R. W. and Brawner, J. N. *Am J Obst & Gynec* 30: 10-19.

time as possibly injurious, although there is no conclusive evidence of harmful results following such treatments

Karnaky⁸ has advocated using acidulated sugar in the vagina combined with occasional douches of dilute acetic acid. Little⁹ states that he has treated thirty-nine cases of gonorrheal vaginitis in this way, with the number of days required to effect a cure averaging 98.5. At present the number of our own cases in which this method of treatment was used is too limited to report. Sugar tablets must be inserted into the vagina two or three times a day. In our experience the vaginal secretions are not acid if measured some hours after the sugar tablets are dissolved. We have had but little experience with sulfanilamide and wait with interest to learn what value it may have in the treatment of gonorrheal vaginitis.^{10a}

Until recently the treatment of senile or postmenopausal vaginitis has been most unsatisfactory. After cessation of the secretion of estrogen following the menopause or castration, the vaginal mucosa reverts to the thin, ill developed structure of childhood. The secretions are no longer acid and the mucosa becomes once again easily infected. When infected, such patients complain of burning, itching or pain in the vagina, and coitus may be painful or impossible. The appearance of the vaginal walls as described by Davis¹⁰ and others is characteristic. In 1935 Davis reported remarkable success in treating these cases with amniotin subcutaneously. In the majority of his cases he administered 100 rat units of amniotin hypodermically three times a week. The average duration of the treatments was six weeks. Vaginal suppositories alone did not give satisfactory results. Usually complete symptomatic relief was afforded in about ten days. Biopsies taken at intervals during treatment showed the development of the vaginal mucosa in appearance exactly similar to that of a woman during the years of menstrual life. The vaginal secretions also became acid. Davis states that ordinarily the treatment of such patients should be continued for from six to eight weeks, for if any infection or inflammation remains the symptoms will return soon after it is stopped. In any event, when treatment is stopped the vaginal mucosa reverts to that of the childhood type, and if the factors that were responsible for the original infection are again encountered reinfection will follow.

Others have confirmed Davis's observations. Jacoby and Rabbiner,¹¹ for instance, report like results in twenty-five cases.

In our own experience, results have been good when the condition treated was a typical senile vaginitis. Vulvar leukoplakia has not been benefited. We have had two cases, one after removal of the ovaries and one following intra-uterine irradiation, in which the shrunken vagina became so dry and sensitive that intercourse was impossible. In both instances treatment with amniotin was effective in relieving the situation. It is probable that, as well as building up the vaginal mucosa secretion from the cervix and Bartholin's glands was restored.

Five years ago the treatment of vaginitis in children and in women after the menopause was anything but satisfactory. These newer methods of today are yielding gratifying results.

CONCLUSION

We have had better results with the use of estrogen suppositories than with hypodermic treatments with estrogen preparations.

52 Trumbull Street

THE ENDOCRINE TREATMENT OF MENOPAUSAL PHENOMENA

J P PRATT, MD

AND

W L THOMAS, MD

DETROIT

The menopause is an event which has attracted wide attention among the public as well as among members of the medical profession. A variety of symptoms have been attributed to the critical change in a woman's life. A sharp distinction between the physiologic and the pathologic manifestations during this epoch of life has rarely been made. A causal relation between the symptoms exhibited and the physical changes in the body have been frequently assumed but seldom established. Numerous procedures and materials have been advocated for relief or cure, but proof of their specific efficiency is usually lacking. In recent years, special attention has been directed to endocrine preparations as therapeutic agents for relief of menopausal symptoms. In the present study of endocrine therapy, control observations have been used.

MATERIALS

The materials selected for study of the menopause may be divided into capsules and compressed tablets for oral administration, and sterile ampules of oil for hypodermic injection. The capsules, which were identical in appearance, contained theelol, phenobarbital or lactose. The compressed tablets, which were identical in appearance, contained either emmenin or lactose. The ampules contained either oil alone or theelin in oil. For identification, the preparations were given a code number, which was changed frequently to keep the one prescribing them ignorant of the nature of his prescription. One of us changed the code number from time to time without informing the one who administered the preparations. Before the preparation of the unknowns was completed, eleven patients were treated with phenobarbital and six with bromides. With these seventeen exceptions, the agent prescribed was unknown until final observation was recorded.

METHOD

Two hundred consecutive menopausal cases were studied over a period of several months. Only 100 of the subjects returned often enough to justify tabulation. A complete clinical record was written, including history, physical examination and routine laboratory tests of blood and urine. By means of a special form, the presence or absence of most of the symptoms

⁸ Karnaky, K. J. M. Rec. & Ann. Houston, Texas, May, 1936 and other articles.

⁹ Little, A. A. Jr. J. Pediat. 10: 202 (Feb.) 1937.

^{10a} Since the writing of this paper treatment with sulfanilamide has been completed in a series of seventeen cases of gonorrheal vaginitis in children. In nine of the cases the results were dramatic with clearing of discharge and negative smears developing in twenty-four and forty-eight hours. Inadequate dosage probably accounts for the failure of three cases to respond; therefore treatment with sulfanilamide has been successful in nine of fourteen adequately treated cases.

¹⁰ Davis, M. E. Surg., Gynec. & Obst. 61: 680 (Nov.) 1935.

¹¹ Jacoby, Adolph and Rabbiner, Benjamin. Am. J. Obst. & Gynec. 31: 654 (April) 1936.

From the Department of Obstetrics and Gynecology, Henry Ford Hospital.

The capsules and oil preparations were furnished by Parke, Davis & Co. The compressed tablets were furnished by Ayerst, McKenna and Harrison, Ltd.

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commonly attributed to the menopause was tabulated. Environmental and emotional states varied so greatly that they did not lend themselves readily to tabulation, therefore, individual records were made. The symptoms investigated were taken from the current medical literature, which suggests that these symptoms belong to the menopause. Our observations failed to confirm this relationship in many instances, e g, arthritis and hypertension. The list included changes in the menstrual cycle, hot flushes, headache, languor, vertigo, palpitation, insomnia, digestive disturbances, paresthesia, neuralgia, arthritis, weight change, trend toward masculinity, impairment of memory, emotional instability, depression, melancholia, extreme irritability, agitation, apprehension, delirium and suicidal tendency. After voluntary statements were accepted, leading questions were asked, to complete the record. Physical examination included observation on weight change, fat distribution, genital involution, blood pressure change, pulse rate, evidence of arthritis and signs of masculinity. Laboratory tests included bio-assay of the urine in only a few instances and are therefore not reported. Geist¹ has recently called attention to the lack of correlation between excretion of hormones and menopausal symptoms.

Results

Drugs	No of Cases	Complete Relief	Improved	Doubtful	No Relief	Per Cent Completely or Partially Relieved
Unknown						
Theelol	14	8	1		5	64.2
Phenobarbital	21	12	4	1	4	76.1
Lactose	23	12	4	3	4	69.6
Emmenin	8	3	3		2	70
Theelin in oil	10	5	2		3	70
Plain oil	7	4	2		1	85.7
Known						
Phenobarbital	11	10	1			100
Bromide mixture	6	3	1		2	66.6
Totals	100	57	18	4	21	75

Concurrent diseases and conditions which were not menopausal were treated as indicated.

All patients were sufficiently intelligent and informed to be aware of the popularly accepted relationship between failing ovarian function and menopausal symptoms. When treatment was prescribed, the patient inferred that she was receiving some ovarian preparation. Since the nature of the preparation was unknown at the time it was prescribed, the observer was unable to correct the patient's assumption.

The dosage was varied according to the severity of symptoms and the response obtained. One or two capsules or tablets were given from one to three times a day. Injections were given daily for a period of from five to ten days. After varying intervals, the injections were repeated as indicated by the results obtained. The total amount of theelol given to a single patient in the course of treatment varied from 2 to 5 mg. The total amount of theelin varied from 12,000 to 96,000 international units (12 to 96 mg). No untoward effect was noted in any instance.

Patients who did not return regularly for observation were not included in the final tabulation of results. This excluded many who were entirely relieved by the first course of treatment and therefore failed to return. Those who had few or no symptoms besides cessation of menstruation were also excluded.

Many different personality types were encountered but the patients were not classified according to this criterion. The psychotic patients were observed by a psychiatrist. These patients were retained in the hospital not less than three months. Not one of this group was improved.

The use of a placebo is by no means new. Practically every physician of experience has used it at one time or another. It has rarely been used, however, as a check to determine the value of hormone therapy in the human being. A similar experience was recently reported by Aschner and Buch Casamor² in treating gonadal dysfunction in the male. Satisfactory results were obtained in males when no hormones were used if the patient believed that he was receiving gonadotropic stimulating therapy.

COMMENT

The term menopause has been used with the generally accepted broad interpretation. Etymologically it means merely a physiologic cessation of menstruation. The climacteric, or critical age, signifies a period of life characterized by a complexity of phenomena, the most conspicuous of which is the cessation of menstruation. No term accurately distinguishes between physiologic and pathologic processes. The menopause, though loosely used, is popular among the public as well as the medical profession to express the concept of the period of transition in a woman's life from the reproductive period to senility.

The average age of women in this series at the time of observation was 45.6 years. The average age at the onset of the symptoms was 43.5 years. Eleven of the patients had an artificial menopause. The average time that elapsed between the operation and the onset of the first symptoms of the artificial menopause was ten weeks. In general, the symptoms of the artificial menopause were more severe than were those of the natural menopause.

Hot flushes are such a constant symptom of the menopause that no patients are included in this series who did not have this symptom. The frequency and duration of the flushes were recorded but showed rather wide variation. In general, they are a good indicator of the severity of the condition. Some of the patients are more impressed by the sweats than by the flushes. The degree of relief from the flushes and the sweats is the best single indicator of the amount of improvement obtained. For the sake of accuracy in estimating results it is unfortunate that the best criterion is subjective.

Languor was the second most frequent symptom noted in this series. There is no satisfactory measure of the degree of languor besides the impression of the individual experiencing it. Other contributing factors than the menopause were frequently responsible for languor. Among these may be mentioned anemia, hypothyroidism and emotional disturbance.

Different observers agree that approximately 85 per cent of women pass through the menopause without interrupting their daily routine. The 100 cases presented here belong to the remaining 15 per cent, since only those women were included who came for treatment of symptoms of the menopause.

The menopause is a conspicuous event in the life of most women. Environmental changes are frequent and often profoundly influence the life of the individual.

¹ Geist, S. H. and Mintz, Maurice. Pituitary Radiation for the Relief of Menopausal Symptoms. *Am J Obst & Gynec* 33: 643 (April) 1935.

² Aschner, Berta and Buch Casamor, A. Zur Klinik des Senilnuchondismus und Spätkastrations. Zugleich ein Beitrag zur Therapie. *Klin Wchnschr* 14: 86 (Jan 19) 1935.

These changes are too diverse to permit detailed discussion here. The tabulation of results gives no indication of the importance of this factor. In every instance, however, the environment was given careful consideration.

It is realized that 100 cases is a small number from which to draw conclusions. They are sufficient, however, to establish a trend. The method was chosen because it was one means of controlling observations. Medical literature contains an abundance of impressions without controls.

It is interesting to note in the tabulation of results that, regardless of the form of therapy, the majority of patients were relieved or improved. Furthermore, there is only a slight difference indicated for the different agents used.

The question arises whether those who failed to obtain relief would have been benefited by larger doses of theelin or longer periods of treatment. One of the patients in whom treatment failed received more theelin than any other patient. She was subjected to one environmental shock after another. During a three months vacation, however, she was living under ideal circumstances and remained symptom free, although she received no therapy at all. When she returned to the city, the unfavorable environment was again encountered and all her symptoms returned. She resented strongly the necessity of an artificial menopause. She was a highly sensitive woman who responded excessively to ordinary environmental stimuli.

The other failures are still under observation. They are being studied intensively to see whether they represent a group in which the symptoms of ovarian failure predominate. Other factors are being eliminated in an attempt to isolate ovarian deficiency as a primary cause.

One of the patients presenting the menopausal syndrome was seen by a psychiatrist ten years before. She presented identical symptoms on the two occasions. At the time of the first visit she was menstruating regularly and showed no signs of genital involution. The diagnosis at that time was anxiety neurosis. When seen ten years later for the same symptoms, she had ceased to menstruate and showed genital involution. The diagnosis was menopausal syndrome. In both instances she obtained striking relief from sedation. The frequent resemblance of menopausal symptoms to the symptoms of anxiety neurosis cannot be overlooked.

Life is a continuous process. During the reproductive period there is a gradual waning of ovarian function. The transition from the reproductive period to senility is physiologic and gradual. It is not a crisis. The transformation involves the body as a whole, though the change in the ovaries and the organs under their direct control is most conspicuous. In the majority of instances, it is illogical to assume that substitution for failing ovarian secretion will alter the whole body and arrest the natural aging process.

The symptoms occurring at the time of the menopause are complex. Many diseases and pathologic states may be concurrent with the menopause. Is the menopause an entity? Inclusive consideration of all menopausal symptoms really involves a large part of the field of medicine.

CONCLUSIONS

1 The symptoms attributed to the menopause are so diverse that it seems unreasonable to consider that all of them are due to ovarian failure alone.

2 The menopause is a term used loosely to indicate the physiologic transition in the life of a woman from the reproductive period to senility.

3 Pathologic conditions occurring at the time of the menopause should be distinguished from physiologic states.

4 Estimation of the merits of any form of therapy for the menopause should be based on the relief of pathologic symptoms and not on changes in physiologic states.

5 Equally good results may be obtained by many agents used empirically.

6 Substitution therapy should be reserved for those cases in which the pathologic symptoms can be demonstrated to be due to ovarian failure.

7 The method used in this study offers one means of selecting cases probably due to ovarian failure.

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ABSTRACT OF DISCUSSION

ON PAPERS OF DRs FRANK, GOLDBERGER, SALMON AND
FELSHIN, DRs BURCH, MC CLELLAN, SIMPSON,
JOHNSON AND ELLISON, DR LITZENBERG,
DRs LEVINS AND ADLER AND DRs
PRATT AND THOMAS

DR EMIL NOVAK, Baltimore. The paper by Dr Frank and his co-workers emphasized again that physicians are still floundering in the treatment of amenorrhea. The groups which they described on the basis of hormonal studies are not unlike those which can be demonstrated by serial endometrial biopsy. For example, in amenorrhea one may find a persistently scanty and atrophic endometrium or one which exhibits an essential normal cycle (except for the bleeding phase), or one may find a typical hyperplasia, this last corresponding to the polyhormonic hyperplasia described by Zondek. In the same way, endometrial studies show that excessive menstruation can occur from almost any type of endometrium. Most characteristically one finds some degree of hyperplasia, but often the endometrium is of a normal interval type or even quite atrophic. Even a secretory endometrium may be seen in certain types of functional bleeding. The papers we have heard today illustrate the usual inadequacy of blood and urine hormone studies in pointing the way toward successful treatment. Valuable as such studies are from a scientific standpoint, they are not readily practicable in the vast majority of cases, and I believe that in the present state of our knowledge endometrial studies will often furnish just as valuable information of ovarian function, and far more simply. I do not like the use of the term ovarian deficiency by Dr Burch and his co-workers in the explanation of functional bleeding. Ovarian substance, or hypophysis-ovarian imbalance, would seem to be the underlying factor in these quantitative menstrual disorders, whether in the direction of excess or deficiency. It should not be forgotten that typical hyperplasia per se has nothing to do with uterine bleeding. It represents simply a maximum effect on the particular endometrium of a growth hormone, estrogen, which exerts a special growth effect on genital mucous membrane. But bleeding does not necessarily parallel this growth effect, for the bleeding "spill" may occur at almost any level. All physicians have seen cases of marked hyperplasia associated with long continued amenorrhea. Dr Burch states that the degree of endometrial change corresponds to the severity of the bleeding, an observation which does not agree with mine. The thyroid type of either menstrual deficiency or excess offers the best results in treatment, but unfortunately it constitutes only a small proportion of all cases. I agree with Drs Pratt and Thomas, and thus could be stated almost a priori, that many symptoms are unjustifiably attributed to the menopause. They include in the symptoms studied in this group of cases such indefinite manifestations as languor, digestive symptoms, impairment of memory and many others of this very subjective group. Dr Frank, formerly almost an organotherapeutic nihilist, has shown how adequate estrogenic therapy in menopausal cases brings

about disappearance of gonadotropic substances in the urine, with corresponding improvement in the patient's symptoms

DR. ELMER L. SEVRINGHAUS, Madison, Wis. The discussion of Drs. Lewis and Adler shows how a physiologic mechanism can be used for a pharmacologic purpose. They applied estrogen not as substitution therapy, which is the usual goal of hormone therapy, but to facilitate healing in an infection. There is excellent agreement among the different clinics trying this therapy, which is a real contribution to the cure of vaginitis. This concept of the pharmacologic use of a physiologic process explains many results with thyroid therapy. Nearly all these disturbances in the field of gynecology are hypofunctional. The one exception might be the menopause, in which with underfunction of the ovary, or absence of function after castration, there is excessive activity of the anterior pituitary in producing the gonadotropic material. The thyroid hormone tends to stimulate the rate of activity of all tissues. Consequently, stimulating results on the pituitary and the ovary may be expected from thyroid therapy. I think that is why results are seen from use of thyroid in amenorrhea and menorrhagia. Dr. Litzenberg's statement that his patients are uniformly hypothyroid needs comment. The normal basal metabolism of women is at least 5 per cent below zero, which means merely that our standards were set prematurely. Until a woman has a basal metabolism of -15, she must be considered within normal limits. The big problem before gynecology and endocrinology now is to determine how much deficiency exists in a given patient, and then to know how much material to give in a therapeutic program. Dr. Frank is studying these cases quantitatively. These studies are still to be reserved for the highly experimental clinics, because assay techniques are far from being uniformly reliable, and the significance of the urinary estrogenic output, as compared with the amount circulating in the blood and active within the body, is not known as yet. Obviously, the amount in the urine represents only a small fraction of that which is active, and until a considerable number of normal individuals are studied we cannot make even an empirical decision as to the significance of that urinary excretion. I am at a loss to know what Drs. Pratt and Thomas mean by contrasting the physiologic and pathologic disturbances of the menopause. All these vasomotor and psychic symptoms may occur in patients before the menopause, but the significant thing is that, after castration of a woman who has no other disturbances, these are the symptoms reported. They occur frequently in the spontaneous menopause. There is, conversely, the experience that all these symptoms can be abated and usually completely relieved by the use of an adequate dose of estrogenic materials. Drs. Pratt and Thomas did not tell how much of the estrogenic substance per day is employed in a case. The necessary dose varies tremendously. For the present at least it would be well to stay with the standardized preparations from manufacturers who have been making these materials long enough so that one knows the materials are what the labels say they are. Estrogen will accomplish results either orally or by injection. I would prefer to stay away from the parenteral use of a foreign oil which leads to foreign body reactions, using only the oral preparations.

DR. E. C. HAMBLEY, Durham, N. C. Drs. Lewis and Adler have proved conclusively the specific vaginal effects of estrogenic principles. Drs. Pratt and Thomas have described the generally appreciated psychotherapeutic associations of the treatment of so called menopausal symptoms. Larger doses and more prolonged administration of estrogenic principles in oily solution than Drs. Pratt and Thomas used are necessary to secure pituitary depression as judged by urinary hormone assays. Some of the failures reported by Drs. Pratt and Thomas might have responded to more prolonged therapy. The therapeutic employment of estrogen and progesterin in my experience has permitted the conservative management of many of the anovulatory types of functional menometrorrhagia. In addition to a local endometrial effect, there results beneficial depression of the pituitary permitting rest and restitution of the exhausted ovaries. Such treatment may be exhibited at the time episodes of bleeding occur or may be employed cyclically following an initial curettage. Doses similar to those employed for full endometrial proliferation in castrates are frequently necessary. Such therapy is too expensive at present to warrant

its general use. The employment of the so called gonadotropic principles in functional anovulatory phases, responsible in many instances for menometrorrhagia, amenorrhea and sterility is the hope of initiating physiologic exocrine and endocrine responses in such ovaries, has been widespread and uncritical. Such principles, even when exhibited in doses much larger than those in general use, possess no claims for specificity. Among fifty-one patients with ovaries presumed to be in anovulatory phases, I have observed no evidence of any specific effect from such therapy as judged by the finding of corpora lutea at laparotomy, or by finding a progestational reaction in the endometrium. Daily doses as large as 8,000 rat units, and total doses as large as 24,250 rat units, given over a period of eight days, have been employed. In a recent series of thirty-seven patients with functional anovulatory menometrorrhagia who were treated during episodes of active and excessive uterine hemorrhage, only six showed any diminution in the amount of bleeding during such therapy. I agree with Dr. Litzenberg that thyroid extract is our main standby in endocrine therapy.

DR. FRED H. FALLS, Chicago. My experience agrees with that of Drs. Frank and his co-workers that little is to be expected from the injection of estrogenic or gonadotropic substance in the primary amenorrheas. The lack of response to the large doses they used show how utterly useless the dose usually recommended must be. I should like to ask Dr. Frank whether in his opinion the use of progesterin in addition to estrogen and the gonadotropic hormone might be indicated in those cases especially in which a normal or increased amount of estrogenic hormone in the blood is demonstrable. There is some evidence to show that the various phenomena developing during the menstrual cycle are dependent on a balance between these two hormones. Drs. Burch and his co-workers emphasized that an accurate diagnosis should be made in these patients showing menorrhagia and metrorrhagia before attempting any form of endocrine therapy. How easy it is in a woman somewhat obese to overlook a small fibroid uterus. I have found definite organic changes including carcinoma, fibromyomas, adenomyomas and polyps in uteri removed from patients previously treated over a considerable period of time with endocrine therapy. Thyroid extract is valuable in these patients with menorrhagia on a basis of hypothyroidism. I have not found it necessary in these cases to use the estrogenic hormone in addition to the thyroid. Gonadotropic substances from the urine of pregnant women or from the placenta have given some favorable results in some menorrhagia cases, but I have noted usually that these results were temporary and that progesterin preparations seemed to stop the bleeding when the other hormone failed. I have also noted in a few cases temporary improvement followed by failure after injections of progesterin. In such cases a combination of progesterin and thyroid has given good results. Thyroid deficiency as a predisposing cause of sterility is almost universally admitted. The mechanism by which this is brought about is not clear. Does the thyroid extract act directly on the ovary? Does it act on the hypophysis primarily and on the ovary secondarily, or does it act directly on the uterus? The more or less empirical use of a remedy usually precedes the scientific explanation of its action by a number of years. As regards the treatment of habitual abortion or threatened abortion by progesterin, more recent experience has confirmed my earlier clinical impression and laboratory experiments demonstrating its inhibiting action on the contractions of the human uterus reported here two years ago. There is no doubt that this is a valuable therapeutic agent. I am impressed by the careful method of control which Dr. Pratt and Dr. Thomas have adopted to avoid any semblance of prejudice on their part which might develop in favor of one or another treatment. The results are thought provoking. My experience in dealing with these menopausal cases recently has been largely confined to the use of emmenin in the liquid form. Whether the effect is produced psychologically or physiologically, I am not prepared to say, but that a higher percentage of patients get a greater degree of relief than with the sedatives and estrogenic hormone injections previously used I am firmly convinced.

DR. AUGUST A. WERNER, St. Louis. Drs. Pratt and Thomas stated that "a group of symptoms occurs that is char-

acteristic for the menopause, castration and partial castration." This is an accepted fact. These symptoms are not due to failure of ovarian function per se, they are initiated by ovarian failure. Failure of ovarian function disturbs the pituitary gland, which exercises an influence over most of the other glands of internal secretion. This secondary disturbance causes imbalance of the two divisions of the autonomic nervous system and these combined factors produce the characteristic symptoms complained of by castrates and menopausal women. The duration of the menopause in some women is from three to six months, in others the duration may be five or six years. If a woman whose glandular-autonomic stabilization will require five years is treated for three months with relief of her symptoms, it can be expected that she will have a recurrence of her symptoms at a later time, and treatment must be reinstituted from time to time until they cease to recur. Some women have mild to severe psychotic symptoms at the climacteric, and if they are sufficiently severe the condition has been termed involuntional melancholia. Drs Pratt and Thomas stated that they had kept some of these psychotic women in the hospital under treatment for as long as three months without relief. We treated forty women having involuntional melancholia (menopausal psychosis) at the St. Louis Sanitarium and at Missouri State Hospital No. 4. Twenty were given injections of theelin and twenty were administered physiologic solution of sodium chloride intramuscularly as controls. Six months' treatment was decided on arbitrarily. Within six months, 66 per cent of the theelin treated women had recovered, and those who were given physiologic solution of sodium chloride were not improved. We then treated the controls with theelin and had approximately 66 per cent recovery in that group. I cannot agree with Dr Pratt that estrogenic hormones do not help these women or that such treatment is only psychic.

DR CHARLES W. DUNN, Philadelphia. An unmentioned group of endocrine disorders, the adrenal cortical hyperplasias or tumors, are concerned in all the presentations except that of Drs Lewis and Adler. In the adrenogenital syndrome—virilism—and in basophilism the ovarian disorder accounts for the hypo-ovarian syndrome as defined by Dr Sevrinhaus. Dr Broster of London performs partial adrenalectomy in cases of adrenocortical hyperplasia, with good results in restoring menstrual function. In his cases, preoperatively, the menstrual picture varied, some had amenorrhea, others hypomenorrhea and others increased menses. Adult cases of this type show early onset of menses and menorrhagia, at 16 to 18 years of age, diminishing or abrupt cessation of menses, onset of hypertrichosis and frequently hypertension. Sterility and the hypo-ovarian syndrome are also part of adrenal cortical hyperfunction. Drs Novak and Werner pointed out that we are dealing with multihormonal disturbances. Crookes states that the pituitary pathology of basophilism (pituitary basophilic adenoma, carcinoma of adrenal cortex or thymus and arrhenoblastoma of the ovary) is a hyaline cytoplasmic change and loss of basophilic granules in the basophil cells, the presumed source of the gonadotropic fraction. Although reputed to be a hyperfunctional basophilic reaction, pathologically and clinically a subovarian state results. In such adrenal cortical disorders, Grollman believes that the pituitary changes initiate the ovarian hypofunction and in some manner stimulate the androgenic zone, which is a destructive cell area lying beneath the adrenal cortex. He believes that adrenal cortical carcinoma does not produce basophilism. This view is supported by authentic cases and one recently reported by Ullam. Patients presenting hypertrichosis, moderate hypertension and a history of sterility were treated with progesterone and pregnancy occurred. Patients simulating the Cushing type became pregnant while amenorrheic, confirming Dr Frank's observation. As early as one month after pregnancy, patients have developed an acute clinical condition of pituitary-adrenal origin, this brings forth Grollman's belief that puberty and pregnancy induce hyperplasia of the androgenic layer. In treating these cases I have to administer higher dosage of estradiol benzoate than given by Dr Frank and his co-workers. If dosage is low the symptoms are relieved but the menses are not influenced. Higher dosage not alone relieves the symptoms but also induces uterine bleeding in the amenorrheic cases.

DR JACOB HOFFMAN, Philadelphia. At the Endocrine Clinic of the Jefferson Hospital we have had the opportunity of studying more than 800 cases of functional menstrual disorders, sterility and symptomatic menopause. Endometrial biopsy as well as the sex hormone determinations of the blood and urine were used in the evaluation of these cases. An analysis of our observations reveals that these patients fall into two main groups. In one the disorder is purely functional, is capable of spontaneous correction and is amenable to treatment, in the other the condition is an expression of constitutional inferiority or a deep-seated endocrinopathy and is very resistant to any form of therapy. We have employed both general medical measures and organotherapy. Controls were used in whom the sex hormone preparations were employed. Our experience has shown that the commercial preparations have only a limited sphere of usefulness. This is not surprising, for the gonadotropic substances have not been shown to exert a stimulating effect on the human ovary, while the ovarian sex hormones, though capable of stimulating the accessory genitalia, cannot activate the ovary itself. An indirect effect of these substances by way of the anterior hypophysis has been demonstrated in the laboratory animals but not in man. The use of estrogenic preparations for the relief of menopausal symptoms has been hailed as an outstanding example of the value of sex hormone therapy. We have employed estrogen as well as nonspecific therapy consisting of hypodermic injections of saline solution together with sedatives and found the former less effective, although large doses have been administered over a long period of time. I am therefore wholly in accord with the observations of Dr Pratt and his co-workers. When it is recalled that the climacteric involves not merely a withdrawal of estrogen but also a general endocrine upheaval as well as structural alterations throughout the organism incident to the approaching senium, the beneficial effects of estrogen may well be questioned. Medical treatment yields the best and most enduring results. General hygienic measures, correction of nutritional faults and the correction or elimination of all constitutional depressive states, supplemented by thyroid extract where indicated, will favorably affect the organism as a whole and with it the gonads. Reduction of weight in the obese and an increase in weight in the thin asthenic type is often sufficient to regulate the menstrual rhythm and raise the level of fertility.

DR MISCH CASPER, Louisville, Ky. This symposium brings out some real advancement in endocrinology. Why do little girls have to have gonorrheal vaginitis? Is the first question. Why does any one have to have gonorrheal vaginitis? Why can't this humiliating and distressing disease be banished, now that so much is known about the gonococcus and gonorrhea and there really exists something to offer in the way of the cure of this disease? The medical profession has been derelict in the handling of gonorrhea in the past, but I believe now there is an awakening, because we have something in the way of treatment to get rid of this disease. I am sure that Drs Lewis and Adler, while not discussing gonorrhea generally, have no objection to using other means of treatment along with the endocrine treatment. The Elliott hot water treatment, hyperpyrexia, and later the sulfamidamide treatment have all proved effective in getting rid of gonorrhea.

DR CECIL STRIKER, Cincinnati. I should like to ask Dr Frank whether he has any fear or any evidence of malignant changes following massive doses of these hormones, and I should like to have an expression both from him and from some of the other authors.

DR PETER B. SALATICI, New Orleans. I would like to ask Dr Litzenberg whether the question of sterility in the male side of the picture was thoroughly studied.

DR JEAN PAUL PRATT, Detroit. I am grateful to the discussors for helping to emphasize some of the varied manifestations of the so-called menopause. Dr Novak emphasized the vasomotor symptoms as being outstanding, and perhaps objective symptoms. I agree in part that the hot flushes may be objective. For the most part however, they are subjective. They seem to be such an important symptom of the menopause that we did not include cases as menopausal unless the women had hot flushes, because that seems to be the one symptom on which every one agrees when they discuss the menopause. We charted

the number of flushes. We asked the patient to do the same, but we were confronted with an unscientific observer furnishing the information. Most observations of the menopause are unscientific. It is extremely difficult to set up any experiment that will correspond with the carefully controlled laboratory experiments. Dr Sevringhaus questions the term "physiologic or pathologic states." Life is a continuous process. There is a period of rapid growth in childhood, a period of continued rapid growth in adolescence. Then there is a flattening of the curve during the reproductive period, following which the curve trends downward to senility. Somewhere along that curve occurs the first conspicuous event of the reproductive life, namely, the first menstruation. In the mind of the public the first menstruation is puberty, but physicians know that puberty extends over a long period. The same is true of the menopause. The public is firmly convinced that cessation of menstruation is the menopause, but physicians know differently. It is a very gradual change. The function of the ovaries trends downward for a period of several years. That is what I mean by a physiologic state. It is not a sudden change in the state of the ovaries. It is a gradual process which has been going on for years. The question of the use of large doses of estrogens has been very kindly answered by Dr Hoffman. Dr Werner insists on keeping the psychoses in the group of menopausal symptoms. I am sorry that I cannot give the statistics furnished by the superintendent of a large institution for the insane, who told me that the expectancies of the psychoses of that type were no greater in relation to the menopause than they were at any other time in the individual's life, so that the justification for calling the psychosis menopausal is not borne out by statistics. We do not mean to imply that the menopause cannot be cured by the estrogenic hormones. Fortunately, they can cure, as well as almost anything else. It does not make so much difference in the large proportion of cases what agent is used. We were trying to determine what particular patients had evidence of ovarian failure and reserved estrogenic therapy for that particular group. The 85 per cent who go through the menopause without any particular disturbance keep most of the menopausal women from seeking medical aid, so we probably are dealing with only 15 per cent. Of that 15 per cent we found that 75 per cent were relieved by almost any form of therapy. Probably in the small group remaining it will be found that there is a definite need for some specific therapy.

DR JENNINGS C LITZENBERG, Minneapolis. The question was asked whether anything had been done about the male studies. I was discussing one subject only, and that is the endocrine influence on the female. It goes without saying that every one of these patients was studied thoroughly from every other standpoint, which always should be done with every sterile couple before taking up the endocrine studies. The thorough study of the husband as well as of the wife was made in every case of sterility. One should not study individual sterility alone but should approach the question as pair sterility. Any one who attempts to treat sterility without studying the male as well as the female, of course, is not doing his duty.

DR MORRIS A GOLDBERGER, New York. In our bio-assay and treatment of amenorrhea, only functional cases of amenorrhea were studied. Cases in which there were severe endocrine disturbances were omitted. The animal response to extracts from human beings is not positive proof that the substances obtained are definite causative factors in the production of symptoms in the human being. Our hormone bio-assays have shown that cases of amenorrhea fall into four groups: the acyclic type, the subthreshold type, the normal type and the polyhormonal type of Zondek. The presence of gonadotropic factors, or an absence of them, may be found in any of these groups. The response of the menopause patient to 30,000 rat units as viewed objectively, consists in the disappearance of the gonadotropic factors from the urine, and the change in the vaginal smear. The patient is instructed how to prepare the smear, and when obtained they are brought to our laboratory, where they are stained with 1 per cent aqueous fuchsin. A change in the smear occurs corresponding to that in the rodent and consisting in the replacement of the leukocytes by small epithelial cells, even to complete squamous cell metaplasia. These effects are definitely noticed in the menopause, and those cases of amenorrhea which respond in this way are taken out

of the functional amenorrhea group and placed in the menopausal group. Dr Novak stressed the use of serial endometrial biopsies. We have done this in several of our cases but as yet have not fully correlated the results obtained with our bio-assays. Another point Dr Novak mentioned that we also stress is that the uterus in our amenorrhea cases appears to be refractory to treatment with hormones. We agree with Dr Sevringhaus that we do not as yet know whether or not the hormone assays are quantitatively and qualitatively the same. To Dr Fall's question of the use of progestin in addition to estrogen in the treatment of amenorrhea we can only say that, were it to be used, a definite change in the endometrial picture to one resembling more nearly the normal premenstrual endometrium would be obtained. Bleeding may take place, but the cost of treatment would be doubled, since approximately 35,000 rabbit units of progestin is necessary. Besides, in the long run the patient would not be appreciably benefited because, in order to insure a continuation of the menstrual function, treatment would have to be prolonged. In answer to Dr Striker, whose question concerns the fear of the use of large doses of estrogenic preparations, I may say that in adults we have never experienced any untoward effects or any changes suggesting malignancy. Bleeding, however, has been obtained. On the other hand, in prescribing gonadotropic substances, especially the newer products made from horse serum and available in high concentrations, care must be exercised in their use because of the proteins present, to which many individuals may be sensitized. When these substances are used, we invariably test for sensitivity intradermally.

A NEW DIAGNOSTIC INTRADERMAL REACTION WITH BOWEL ANTIGEN

INDICATING THE PRESENCE OF THE VIRUS OF
VENEREAL LYMPHOGRANULOMA IN THE
INTESTINE AND DIFFERENTIATING
COLITIS ASSOCIATED WITH
THAT VIRUS

MOSES PAULSON, M.D.

WITH THE TECHNICAL ASSISTANCE OF BETTY KRAVETZ
BALTIMORE

Idiopathic or nonspecific ulcerative colitis is an involvement of the large intestine, regional or general, of unknown etiology, resulting in an exudate of, or feces containing, blood, mucoblood or pus, or all of them. There was reason to believe that in some cases colitis with or without a stricture might be due to a virus. If this were proved, a virus as a factor in intestinal disease would come into being, and the classification idiopathic ulcerative colitis would be narrowed.

The first step in attempting to demonstrate colitis associated with virus rests, if not in the actual isolation, at least in the indication of the presence of such an agent directly from the region of suspected colonic involvement.

Patients with ulcerative colitis of indeterminate etiology were selected in whom the possible presence of a virus in the colon might be related to the colitis as suggested by their having a positive intradermal response to inactivated hubeo pus due to the virus of

From the Gastro-Intestinal Section and Laboratories of the Medical Clinic of the Johns Hopkins Hospital and the Johns Hopkins School of Medicine.

Read before the Section on Gastro-Enterology and Proctology at the Eighty-Eighth Annual Session of the American Medical Association, Atlantic City, N. J., June 11, 1937.

The following cooperated: Drs Harry M Robinson, Baltimore, and Harry B Burr, Houston, Texas, sent generous supplies of hubeo pus. Drs George W Binkley and H N Cole, Cleveland, Robert B Greenblatt and Everett S Sanderson, Augusta, Ga., George A Hunt, St. Louis, Collier F Martin, Philadelphia, and Marion B Sulzberger, New York, Margaret Johnson and Ethel H Bohanan of the Social Service Department of the Johns Hopkins Hospital assembled cases.

venereal lymphogranuloma (Frei reaction and Frei antigen, respectively) In this connection, it must be recognized that a positive reaction to the Frei test associated with otherwise unexplained ulcerative colitis does not of itself prove that the virus of venereal lymphogranuloma is etiologically related to the colitis, it is conceivable that a colitis might not bear any relation to antecedent, simple, uncomplicated and healed venereal lymphogranuloma or to coinciding venereal lymphogranuloma

It was hypothesized that if antigens could be prepared from bowel material from patients with ulcerative colitis which would give reactions comparable with known positive and negative reactions to Frei antigen (diluted inactivated bubo pus), a positive intradermal response with the bowel antigen would indicate the presence of a specific antigenic substance, either the virus of venereal lymphogranuloma or an associated product—nonspecific or otherwise but acting in a specific manner—in the intestinal contents from which the antigen was made

I have already reported¹ the striking intracutaneous responses with bowel antigens from three patients with ulcerative colitis with positive reactions to the Frei test. Reactions of 5 mm or more in diameter persisted for at least nine days in six patients with ulcerative colitis and positive Frei reactions, negative reactions with these antigens were encountered in at least twelve of thirteen control patients with and without colitis and with negative Frei reactions. This indication of the presence of virus was incomplete owing to technical difficulties in the preparation of bowel antigen. As a result, no control studies could be undertaken on persons without colitis but with positive Frei reactions. Also because of technical difficulties, control studies with bowel antigens, particularly from patients with ulcerative colitis and negative Frei reactions, could not be done.

This communication reports a new technic making possible the practical preparation of bowel antigen and the results of studies with additional bowel antigens, including the necessary control studies referred to. The following data establish, it is believed, a practical intradermal diagnostic method with bowel antigen to indicate the presence of the virus of venereal lymphogranuloma or an associated product in the human intestine, as well as a means of differentiating colitis associated with the virus of venereal lymphogranuloma.

PROCEDURE

A Preparation of Patient—1 Two enemas of physiologic solution of sodium chloride are given, one at bedtime and the other on the following morning a few hours before the rectosigmoidoscopic examination. The purpose is to prevent gross fecal contamination.

B Securing of Material—1 Devices employed (a) A rectosigmoidoscope 1 cm (three-eighths inch) or 1.6 cm (five-eighths inch) in diameter and 25 cm (10 inches) in length is employed, depending on the presence and size of the stricture. An instrument smaller than 1 cm in diameter does not allow adequate vision and satisfactory insertion of the aspirator. This aspirator is of metal and measures 35 cm by 8 mm. These are sterilized by boiling. A suction apparatus is also needed.

(b) The receptacle is a glass tube, 15 cm (6 inches) high by 2.5 cm (1 inch) in diameter, containing fifteen glass beads. The rubber stopper, glass and rubber connections (fig 1) are sterilized in the autoclave.

2 Method The material, which is usually mucopurulent, frequently bloody, but grossly free from fecal matter, is aspirated by suction into the glass tube containing beads. The prime object is to secure it undiluted and measurable in order to make accurate antigen dilutions, thus, to 1 cc of the material, 10 cc of a diluent (azochloramid, to be referred to later) is added. This is called a 1 to 10 dilution. In most instances this is not possible, for either there is too little exudate or it is very tenacious, too thick or, sometimes, not visible. Under such circumstances 5 cc of the diluent is poured through the rectosigmoidoscope and then quickly aspirated.

Aspirated material is vigorously agitated so as to be well mixed and to be broken up into smaller particles.

Whenever dilution in vivo becomes necessary, the subsequent dilutions in vitro in the preparation of

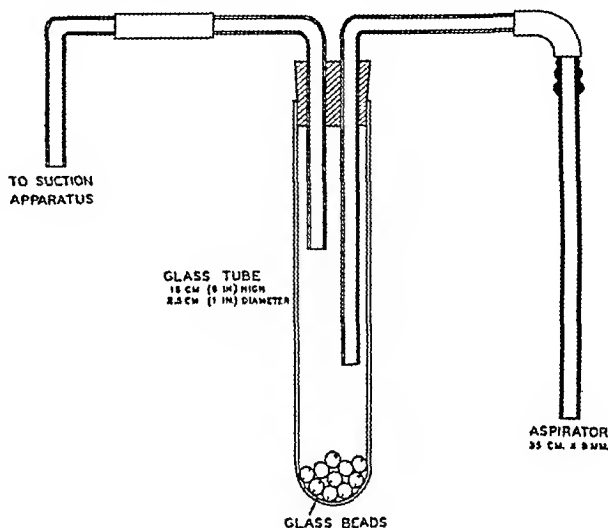


Fig 1—Device for collecting material for antigen from the bowel through the rectosigmoidoscope

antigen become arbitrary, since standardization by weight or volume is impossible, however, the same criteria, to be noted, are employed throughout. Whenever the material is too thick to be readily drawn into a sterile calibrated 10 cc pipet, it is treated as undiluted and to each cubic centimeter 9 cc of the diluent is added. It is arbitrarily designated as a 1 in 10 dilution. Material of "medium" consistency is that which can be drawn into a sterile calibrated 10 cc pipet with facility. Usually, from 3 cc to 5 cc of this material is obtained. The diluent is added to make a total volume of 10 cc.

Not infrequently, the aspirated material obtained after the addition of the azochloramid through the rectosigmoidoscope is very thin and translucent, contains little bowel exudate and is mostly diluent. In this case no further dilution is made.

It is to be emphasized that the dilutions are actually higher than indicated, since sodium sulfite and merthiolate—as will be noted—are added.

C Preparation of Antigen—I have already reported¹ the inability to demonstrate the presence of a reaction-producing substance either in filtered bubo pus, a portion of which when unfiltered produces a positive Frei

1 Paulson Moses: Intracutaneous Responses Comparable to Positive Frei Reactions with Colonic Exudate from Chronic Ulcerative Colitis Cases with Positive Frei Tests. *Am J Digest Dis & Nutrition* 3: 667-673 (Nov.) 1936.

reaction, or in filtered bowel material. Thus, the problem in the preparation of bowel antigen concerns itself with the destruction of bacteria without disturbance of the possible antigenic factor and with dilution of the material sufficient to decrease foreign protein, so as not to mask the intradermal reaction, and yet insufficient to eliminate for practical purposes the antigenic factor. Also, heating at 60 C for two hours on one day and one hour on the following day, even in the presence of the bactericidal and bacteriostatic action of the antigen diluent—azochloramid—will not always result in complete bacterial destruction. A higher temperature at 80 C for one hour is also employed, since I have learned that the antigenic product in bubo pus due to venereal lymphogranuloma will withstand higher temperatures.

The heating is accomplished in the following manner so that at least one antigen will be obtained from a given patient suitable for use in the face of the difficulties referred to.

Equal portions of the material aspirated from the bowel through the rectosigmoidoscope, with or without

viving both the original supply of azochloramid and the first heating, while making the final dilution no higher than that of the previous antigens.

Vial D The contents are diluted with half the amount of azochloramid used in vials A and B, and the vial is sealed and left at room temperature over night. Then it is heated at 80 C for one hour, after which the remaining half of azochloramid is added.

Not infrequently, the material obtained through the rectosigmoidoscope after the necessary addition of 5 cc. of azochloramid is thin, translucent instead of opaque, contains little bowel exudate and is mostly diluent. Equal portions of this material—without further dilution—are placed in two vials. One is heated at 60 C for two hours and for one hour the following day. The other is left at room temperature and on the following day is heated at 80 C for one hour.

In order to dechlorinate the antigens to eliminate the irritating dermal properties and to avoid the carrying over of free chlorine to the sterility test medium, the following procedure is carried out. To azochloramid solution (1:1,666) equivalent to the amount in the vial

TABLE 1—Master Chart Bowel Antigens

			Type I						Type II Clinical Venereal Lympho- granuloma			Type III			Type IV			Type V			Total Test Antigen, 21	
			Frel + Ulcerative Colitis						Frel - Ulcerative Colitis 1 W ♂			Total with Types I and II			Frel - Ulcerative Colitis (Control) 7 W ♂ 3 W ♀			Frel + Ileostomy Ulcerative Colitis (Control) 1 W ♀			Total Intra- dermal Tests	
			A (2 W ♀)* (3 N ♀)			B (5 N ♀) (1 N ♂)																
Patients Tested			+	-	Total	+	-	Total	+	-	Total	+	-	Total	+	-	Total	+	-	Total		
2 N ♂	Positive	+ Colitis	26	2	28	2	10	17	5	0	5	50	1	1	2	10	18	28	0	3	3	53
7 N ♀	Frel																					
2 W ♀	reaction																					
4 N ♂	Positive	- Colitis	11	0	11	1	10	11	3	5	8	30	0	2	2	6	36	42	0	1	1	49
4 N ♀	Frel																					
1 W ♀	reaction																					
			37	2	39	3	20	23	8	5	13	80	1	3	4	16	54	70	0	4	4	138
10 W ♂	Negative	+ Colitis	1	29	30	1	23	24	0	11	11	60	0	2	2	1	43	49	0	4	4	120
5 W ♀	Frel																					
1 N ♀	reaction																					
8 W ♂	Negative	- Colitis	0	41	41	0	11	11	0	12	12	64	0	4	4	3	53	61	0	2	0	131
3 W ♀	Frel																					
5 N ♂	reaction																					
6 N ♀			1	70	71	1	34	35	0	23	23	129	0	6	6	4	106	110	0	6	6	201
58 patients			38	72	110	4	59	63	8	25	33	209	1	9	10	20	160	180	0	10	10	400

* W indicates white and N Negro

the addition of 5 cc. of azochloramid, are placed in four sterile 5 or 10 cc. No. 12 army vaccine vials.

Vial A The contents are diluted either 1 in 10 or 1 to 10 with azochloramid, as already indicated. The vial is sealed with a rubber stopper and collodion and heated in a water bath at 60 C for two hours, left at room temperature over night and on the following day heated at 60 C for one hour.

Vial B The contents are identically diluted and sealed, but the vial is left at room temperature over night to insure the complete action of azochloramid, which is modified by the higher temperature of 80 C for one hour to which the vial is submitted on the following day.

Vial C The contents are diluted with half the amount of azochloramid used in vials A and B, and the vial is sealed and heated at 60 C for two hours. Then by means of a sterile needle and syringe, the other half of the diluent is added. This vial remains over night at room temperature and on the following day is heated at 60 C for one hour. The purpose is to supply fresh bactericidal action on organisms sur-

to be dechlorinated, a sterile, fresh 10 per cent aqueous solution of sodium sulfite is added until the yellow color completely disappears. An equal amount of the sulfite is added to the antigen.

Sterility tests then follow. 0.1 cc. of antigen is placed in 5 cc. of infusion bouillon and incubated aerobically, and 0.1 cc. is inoculated in anaerobic cooked meat medium. The cultures are incubated for seven days. A deep blood agar pour plate is then inoculated with 1 cc. of infusion bouillon culture and incubated aerobically. An anaerobic plate is inoculated with an identical amount from the cooked meat culture, if it is not obviously contaminated, and incubated anaerobically. The plates are incubated for four days.

Merthiolate (1:10,000) is added to each vial immediately after the medium for sterility tests has been inoculated. Not until sterility tests are satisfactorily completed are antigens ready for use.

My experience has been that of the four antigens prepared as outlined in each case, at least one is satisfactory. It is to be reemphasized that this result can be consistently accomplished only by the avoidance of gross fecal contamination.

Although no differences have been noted with antigens heated at the varying temperatures and for the durations noted, I have preferred to employ those prepared at 60 C when obtainable

THE DILUENT AZOCHLORAMID

Without the use of azochloramid this work might not have been accomplished. My earlier experience established that the preparation of satisfactory bowel antigen was a fortuitous circumstance since it was impossible to predict when with identical technic another antigen would become available. In most instances the heat used to inactivate the possible virus or inciting substance prior to intradermal inoculation was insufficient to destroy all the intestinal bacteria. I have found that azochloramid destroys all types of intestinal bacteria both aerobic and anaerobic in tremendous numbers in dilutions which on the addition of sodium sulfite, will give no intradermal reactions. I have found that it will not destroy the antigenic substance in bubo pus due to the virus of venereal lymphogranuloma or the inciting agent in bowel material. Its action will not be disturbed at 60 C and can be checked immediately by the addition of sodium sulfite as noted. This new chlorine compound of unusual properties was introduced by F C Schmelkes in 1934.

SOURCES AND TYPES OF ANTIGENS

- Type I Patients presenting a positive Frei reaction and ulcerative colitis with or without stricture but no elephantiasis or vegetations. They have been subdivided in the master chart (table 1) as A and B, the bowel exudate of the former having proved to contain the antigenic factor and that of the latter having it weakly or not at all.
- Type II Patient presenting a negative Frei reaction (to five active Frei antigens) but a strongly suggestive history and a striking clinical picture of venereal lymphogranuloma with colitis and stricture.
- Type III Subject presenting a positive Frei reaction without any disorder of the bowel (control).
- Type IV Patients presenting a negative venereal lymphogranuloma history, a negative Frei reaction and ulcerative colitis with or without stricture (controls).
- Type V Patient presenting a positive Frei reaction and ulcerative colitis; the antigen having been prepared from material obtained by ileostomy (control).

SUBJECTS ON WHOM ANTIGENS WERE TESTED

Intradermal reactions with these antigens were tested in four types of cases—those presenting positive and those presenting negative Frei reactions with and without colitis.

INTRADERMAL REACTIONS AND INTERPRETATIONS

One-tenth cc of the bowel antigen is injected intradermally as is the Frei antigen several specimens of which are tested simultaneously on each patient for comparative purposes. The results are read at nine or ten days. A reaction with either the Frei or the bowel antigen is considered positive only if its diameter is at least 5 mm. Induration is found more often than papule formation with or without necrosis; induration may extend beyond papule formation. Erythema extending beyond induration and papule

formation or any skin scarification or pigmentation, is not considered in measurement. Induration and papule formation are the bases of measurement.

SUBJECTS ON WHOM ANTIGENS ARE TO BE TESTED FOR INDICATION OF THE VIRUS OF VENEREAL LYMPHOGRANULOMA IN THE BOWEL

Three patients known to have a positive reaction to at least one satisfactory Frei antigen and three without a history or evidence of venereal lymphogranuloma and with a negative reaction to multiple active Frei antigens, neither group manifesting any active systemic disorder or any organic gastro-intestinal disease are to be inoculated intradermally with the bowel antigen to be tested in the manner already indicated. Multiple Frei tests should be repeated simultaneously whenever possible for comparative purposes. The criteria deter-

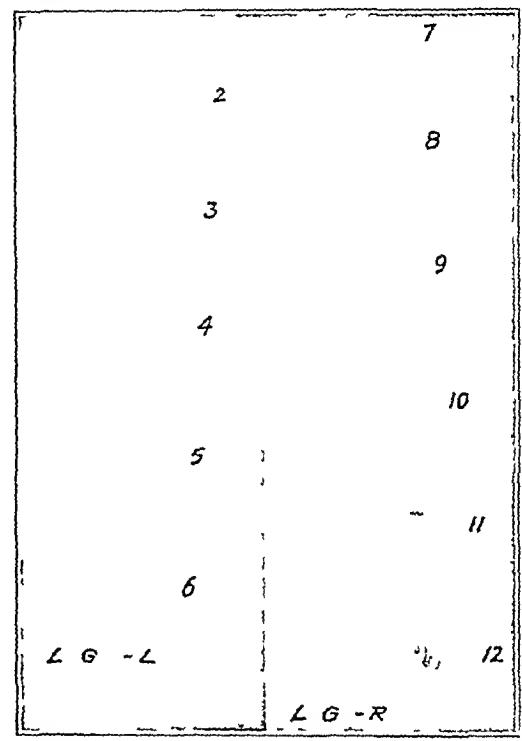


Fig 2—Examples of intradermal responses to bowel antigens. Colored woman with ulcerative colitis, stricture and a positive Frei reaction. Responses were measured at nine days. 2 and 3 are positive reactions to a bowel antigen included in type 1A, both were diluted 1:20; the diluent of the first being azochloramid and the second physiologic solution of sodium chloride. No differences were noted. 4, 9 and 10 are negative reactions to bowel antigens included in type 1B. 8 is the negative reaction to antigen prepared from normal ileal material (type V). 5, 6 and 7 are positive reactions to the antigen prepared from the involved distal colon of the same case (included in type 1A). 5 is a 1:10 and 7 is a 1:20 dilution in physiologic solution of sodium chloride and 6 is a 1:20 dilution in azochloramid. 11 is a positive response to type II antigen. 12 is the positive response to 1:5 dilution of inactivated bubo pus (Frei reaction and Frei antigen respectively).

mining the responses to both Frei and bowel antigens are identical and have been outlined in detail. The testing will be facilitated by the maintenance of an up-to-date list not unlike that of blood donors, of persons who meet the foregoing requirements and who are readily available and cooperative. They can be secured from among the hospital staff, employees and patients.

TERMINOLOGY

To avoid confusion in designation and to distinguish the bowel antigen and its intradermal response from the Frei antigen and its reaction the following terminology

Schmelkes, F. C. and Mark, H. C. N. Dichloroazo-dichloroamine (Azochloramid) and N-Chloro Derivative of the Oxidant in an Oxidation-Reduction System. J. Am. Chem. Soc. 56: 1610-1612, 1934.

is suggested. An antigen prepared from bowel material or tissue and its intradermal reaction should be termed "bowel antigen" and "positive (or negative) intradermal reaction to bowel antigen," respectively.

RESULTS AND INTERPRETATIONS

The master chart (table 1) is a tabulation of raw data secured by the use of twenty-four test antigens of five already described types on fifty-eight patients totaling 409 intradermal tests. Tables 2 and 3 are contractions of data derived from the master chart and presented for further clarity and to emphasize certain important points.

Table 2 shows first the intradermal reactions to all bowel antigens in persons with positive and with negative Frei reactions, without any regard to the question of accompanying colitis. However, in order to show the influence on the dermal reaction of the presence or absence of accompanying colitis—with or without stricture—in those on whom the bowel antigens were tested, subdivisions of each group have been constructed.

with control bowel antigens would not seem to indicate the presence of virus, since those having a positive Frei reaction and no colitis react less often than those having a positive Frei reaction and colitis. Also, when control antigens are tested on those with and without colitis regardless of the Frei reaction, the percentage of positives in these two groups is not significantly dissimilar statistically (table 3). However, the numbers tested may be too small to make definite deductions.

The comparative intradermal reactivity produced by active bowel (types IA and II) and active Frei antigens is more striking than the figures indicate, when the following differences in these antigens are considered. The Frei antigen consists of uncontaminated and undiluted bubo pus, relatively concentrated because of the circumscribed area of involvement. Subsequently it is diluted, usually 1 to 5, prior to inactivation and use. On the other hand, the bowel antigen is secured from material diluted by contaminating bacteria, blood, mucus, pus and intestinal contents. Frequently, the antigenic material is further reduced by an accompany-

TABLE 2—Intradermal Responses to Bowel Antigens

Type of Antigen		All Intradermal Tests (409)*										False Positive Reactions ^a					
		+ Frei (158)					- Frei (251)										
		+	-	Total	Per Cent +		+	-	Total								
IA		40	7	52	86.5		1	93	94	100							
II		3	25	28	10.7		1	34	35	2.9							
IB		17	61	78	16.7		4	118	122	3.3							
Controls III IV V																	
		Colitis (83)				No Colitis (75)				Colitis (120)				No Colitis (131)			
				Per Cent +				Per Cent +			Per Cent +			Per Cent +			
		+	-	Total		+	-	Total		+	-	Total		+	-	Total	
IA		31	2	33	94	14	0	14	100	1	40	41	24	0	53	53	00
II		2	17	19	11.7	1	10	11	9.0	1	23	24	4.1	0	11	11	00
IB		11	22	33	33.3	6	39	45	13.3	1	54	55	1.8	3	64	67	44
Controls III IV V																	

* Figures in parentheses represent totals.

Six positive antigens (types IA and II) were realized from twelve suspected sources.

It is to be noted that reactions to bowel antigens possessing strong reaction-producing substances (types IA and II) paralleled the positive Frei reactions in 86.5 per cent of instances when the question of colitis was not considered. These bowel antigens gave falsely positive results slightly in excess of 1 per cent. However, differences were to be noted in the groups with and without colitis when the same antigens were used. The reactions paralleled those to the Frei test in 93.4 per cent and 76.9 per cent, respectively. False positive reactions totaled 2.4 per cent in the former and were absent in the latter. Similar differences were noted with control antigens (types III, IV and V), false positive reactions occurring in 16.7 per cent of cases with positive Frei reactions and 3.2 per cent in those with negative Frei reactions. However, 33.3 per cent of the patients with colitis and 13.3 per cent of those without colitis, and with positive Frei reactions, and 1.8 per cent and 4.4 per cent of those with and without colitis, respectively, and with negative Frei reactions gave false positive results (table 2). These differences in the response to control bowel antigens cannot be satisfactorily explained. They are probably not due to a non-specific substance in bowel antigens from colitis cases to which a patient with any type of colitis may react, since those having a negative Frei reaction and colitis did not respond as frequently as those having a positive Frei reaction and colitis. Positive reactions

ing dysentery. In preparations of bowel antigen—because of the possible masking of the intradermal reaction by a reaction to foreign protein—the material is still further diluted at least 1 in 10. Several of these antigens have given positive responses when diluted 1 to 20, 1 to 40 and 1 to 80.

The relative closeness in the incidence of intradermal reactions caused by suitable types of both bowel and Frei antigens, in white and Negro males and female

TABLE 3—Intradermal Responses to Control Antigens in Patients With and Without Colitis Regardless of Frei Reaction

	With Colitis				Without Colitis			
	+	-	Total	False Positive Reaction ^a	+	-	Total	False Positive Reaction ^a
Controls	12	76	88	13.6%	9	107	116	7.7%

with and without colitis, the identicalness of their responses persisting at the end of nine or ten days in papule formation or induration of a minimum diameter in any direction of 5 mm, indicates an antigen factor common to the two antigens. This factor is believed to be the inactivated virus of venereal lymphogranuloma or some accompanying product—non-specific or otherwise—acting in a specific manner. Thus a positive intradermal response, under the conditions already set forth particularly when interpreted with the clinical

picture, indicates the presence of virus in the bowel of the person from whose intestinal material the antigen was prepared. A negative reaction may indicate either the absence of such a product or its presence in too small an amount to be shown by this method. It is to be added that these intradermal responses to antigens of unfiltered bowel material prepared in consequence of filtration obstacles cannot be considered as due to bacteria or foreign protein. The sources of the antigens gave a negative response to the Ducrey bacillus vaccine indicating the probable past and present absence of infection due to that bacillus. Gonococci, the causative organisms of syphilis and chancroid tubercle bacilli, nonpathogenic and pathogenic intestinal bacteria, toxins or a foreign protein are not known to cause responses of this nature. Thus it is believed that a practical method has been devised despite its crudity of indicating the presence of the virus of venereal lymphogranuloma in the intestine.

This method can be used also in differentiating colitis in which there is indication of the virus of venereal lymphogranuloma from those in which there is not. Thus the classification ulcerative colitis, which probably includes some cases of colitis accompanied by the virus, can be further narrowed. Besides another approach in management becomes possible for the patients manifesting the virus in the bowel. The importance of the clinical use of bowel antigen tests in the following. The possible contracting of this disease not always through venery its striking incidence as reported by Gray and Hunt³ and by D'Aunoy and von Hamm⁴ its protean manifestations and the probable greater frequency of venereal lymphogranuloma in the white race in this country than is generally recognized, lead to the belief that colitis associated with this virus may not be so rare as has been thought. While the indication of the presence of the virus of venereal lymphogranuloma in the bowel is not proof of etiology of the colitis which it accompanies experimental and clinical evidence strongly suggests this relationship. Differentiation of colitis by the clinical picture or the positive or negative Frei test alone is inadequate. For instance, a white man with a clinical picture of venereal lymphogranuloma of nine years duration had a negative reaction to five human Frei antigens. His bowel antigen (type II antigen) gave eight positive and five negative responses in thirteen patients with positive Frei reactions and twenty-three negative reactions in twenty-three patients with negative Frei reactions. Also non-specific ulcerative colitis with indications of accompanying virus of venereal lymphogranuloma may be indistinguishable clinically from ulcerative colitis without such evidence. As an example in the case of a Negro woman with a positive Frei reaction and otherwise clinically indistinguishable ulcerative colitis (without stricture) the reactions to antigen prepared from her intestinal material paralleled positive and negative Frei reactions. Also, a few patients with non-specific ulcerative colitis not associated with the virus of venereal lymphogranuloma and negative Frei reactions have been followed over years stricture formation occurring during observation, yet in many respects their condition is not always to be clearly differentiated clinically from that of persons regarded as presenting characteristic colonic venereal lympho-

granuloma. The positive Frei reaction may not be particularly helpful, because the colitis may bear no relation to antedated and hereditary venereal lymphogranuloma and does not indicate such virus presence in the bowel.

The significance of bowel antigen is further indicated by the fact that from a white woman with a positive Frei reaction in whom an ileostomy had been performed for the relief of ulcerative colitis (and stricture) a positive antigen (included in type I) was procurable from the involved distal colon, and a negative antigen (type V) from the normal ileum.

The accuracy of the test as a diagnostic method in indicating the presence of virus in the bowel is based on experience with 409 intradermal tests with twenty-

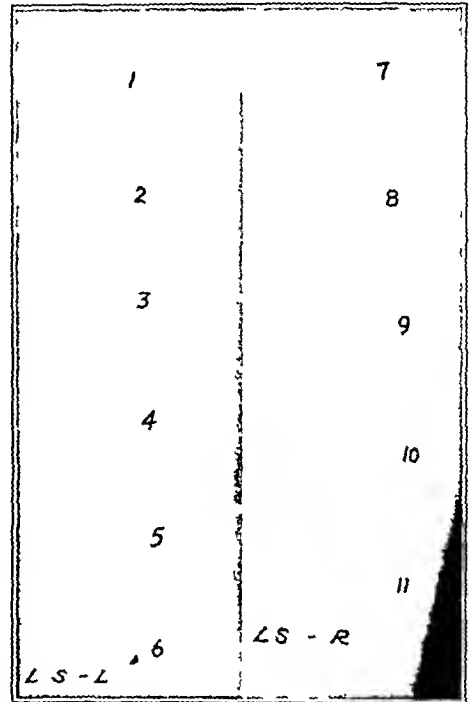


Fig 3—Examples of intradermal responses to bowel antigens. White man with ulcerative colitis and negative Frei reaction (control case). These responses were measured at nine days. All were negative. 1 and 11 are reactions to positive bowel antigens; the former is included in the type I A group and the latter is type II antigen. 2, 4 and 5 are reactions to negative bowel antigens included in type I B. 3 is a response to the type V antigen (control). 6, 8, 9 and 10 are reactions to antigens included in type IV (control).

four antigens on fifty-eight persons. On this basis if antigens are procured only from patients presenting colitis and a positive Frei reaction, or from patients with colitis giving a striking history or a clinical picture highly suggestive of venereal lymphogranuloma, even without a positive Frei reaction the percentage of false positive reactions with antigens like types I and II is anticipated to be in the general magnitude of 1 per cent and 28 per cent respectively. Antigens prepared from sources such as the control group (types III, IV and V) when tested on those with ulcerative colitis and a positive Frei reaction may present 33.3 per cent false positive reactions, however when tested on healthy noncolitis subjects as recommended the percentage of false positive reactions may be about 13.3 per cent in the cases with positive Frei and 4.4 per cent in those with negative Frei reactions (table 2). It is hoped that refinements in antigen preparation will result in fewer false positive reactions.

³ Gray, S. H. and Hunt, C. A. Lymphogranuloma Inguinale. Its Incidence in St. Louis. J. A. M. A. 106: 919-920 (March 14) 1936.
⁴ D'Aunoy, Rigney, and von Hamm. Emmerich. The Diagnostic Value of the Frei Test in Lymphogranuloma Inguinale. Am. J. Clin. Path. 6: 579-585 (Nov.) 1946.

SUMMARY AND CONCLUSIONS

A technic has been evolved for the practical preparation of a bowel antigen for intradermal use. A positive response to the antigen indicates the presence of the virus of venereal lymphogranuloma in the material from which the antigen was made. While the indication of the presence of the virus of venereal lymphogranuloma in the bowel is not proof of etiology of the colitis which it accompanies, experimental and clinical evidence strongly suggests this relationship.

Criteria for interpretation of the intradermal tests have been developed.

By tests with this antigen it is hoped to narrow further the classification nonspecific ulcerative colitis, the cases in which there are indications of the virus of venereal lymphogranuloma in the intestine being separated from those in which there are not, suggesting differences in clinical approach.

Medical Arts Building

ABSTRACT OF DISCUSSION

DR IRVING GRAY, Brooklyn. Dr Paulson's studies would indicate that in some patients with ulcerative colitis a virus may be the responsible, activating factor in the disease. He has described a new technic making possible the practical preparation of bowel antigens and has further established a method whereby it is possible to differentiate colon infection associated with or perhaps due to virus infection. Evidence that an antigen in some cases of colitis behaves like a Frei antigen is strongly suggestive. It is evident that where the Frei test is negative in tested patients virtually no positive reactions may be expected with bowel antigens regardless of the source. In those patients in whom the Frei test is positive and colitis is present, a high percentage of positive reactions may be expected. In those in whom the Frei test is positive and colitis is absent, less positive reactions were obtained. Among the subjects tested, it appears that a positive or negative Frei reaction was the deciding factor rather than presence or absence of colitis. If the bowel antigen was obtained from a Frei-positive patient, a higher percentage of positive reactions could be expected, irrespective of whether or not the subjects tested had colitis. The virus of venereal lymphogranuloma is not known but the lymphotropic tendencies and the clinical manifestations of the disease are recognized. Since ulcerative colitis and venereal lymphogranuloma are clinically and pathologically different, the questions raised by Dr Necheles, when Dr Paulson presented earlier studies on the subject are pertinent. "Can one produce colitis with virus of venereal lymphogranuloma and can material from the colon of persons with colitis and positive Frei reaction cause venereal lymphogranuloma in man and encephalitis in animals?" I should like to ask Dr Paulson to interpret the significance of the results in the type IV group. The high percentage of positive reactions with bowel antigen from a patient with ulcerative colitis with negative Frei reaction is rather striking. It is not quite clear why Dr Paulson assumes that type I-b is the result of a quantitative factor and not a qualitative one. May I inquire whether the clinical course and the sigmoidoscopic observations were in any way unusual? Was any special type of therapy instituted? Dr Paulson is to be congratulated on his interesting and stimulating presentation. He is taking a conservative attitude and not claiming an absolute identity, as there are several exceptions yet to be explained.

DR MOSES PAULSON, Baltimore. While at present it may not be possible to say that a particular bowel antigen from a control case giving intradermal reactions comparable to positive Frei reactions may not have possessed a reaction producing substance indicative of virus present in the bowel material from which the antigen was made, viewing the situation as a whole this appears unlikely. As has been pointed out, positive reactions with control bowel antigens occur less often in those having a positive Frei reaction and no colitis than in those having a positive Frei reaction and colitis. Such responses

seem not to be due to a nonspecific substance in bowel antigen from cases of colitis to which a patient with any type of colitis may react, since those with a negative Frei reaction and colitis do not respond as frequently as those having a positive reaction and colitis. I believe that the difficulties referred to arise from the crudity of the antigen which contains blood, mucous, bacteria and grossly fecal-free intestinal contents. The consequent false positive responses with control bowel antigens and subsequent problems present no greater difficulties than those encountered with other prevailing diagnostic procedures when first employed, before wide experience and refinement took place resulting in improvements. It is anticipated that improvements in bowel antigen preparation and further use will also improve its accuracy. The fact remains that the response and the ability of relatively adequate interpretation under the conditions set forth in spite of bowel antigen crudity is striking. It is to be emphasized that not all the patients from whom positive bowel antigens were secured had strictures, but all had an ulcerative colitis extending into the sigmoid as observed by rectosigmoidoscopy. The problem of therapy was not studied although there appears to be no reason why bowel antigen cannot be used for this purpose whenever the Frei antigen is and in the same manner.

OBSTRUCTIVE EMPHYSEMA AND
ATELECTASIS IN INFLUENZA

WILLIAM SNOW, MD

Director of the Department of Roentgenology, Harlem and
Bronx Hospitals

AND

CHARLES S B CASSASA, MD

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NEW YORK

We have reported in the past obstructive emphysema and atelectasis in acute respiratory disease of infants.¹ We believe that the same reactions take place in influenza and offer a rational explanation for the dynamics of the pathologic changes, x-ray appearance and clinical course. Our work is based mainly on x-ray studies over a period of years at Harlem Hospital, where annually more than 500 cases of pneumonia are seen from Dr J G M Bullowa's service alone. As far as we have been able to determine W G MacCallum is the only one in this country who has promulgated such a theory, which he based on observations made at autopsy.

PATHOLOGY

The presence of emphysema of the lungs in influenza was recognized by pathologists for many years, especially during the World War.

Wolbach² described in 1919 a striking emphysema of the alveoli best seen under the pleura. At times this leads to interstitial emphysema of the lung, mediastinum and subcutaneous tissues of the neck. We have likewise seen this and, in addition spontaneous pneumothorax in pneumonia, which we believe to be due to obstructive emphysema of the lung with rupture into the pleura.

Blake and Cecil³ noted evidence of emphysema of the lungs when they experimentally produced what they considered to be influenza in monkeys.

Read before the Section on Radiology at the Eighty-Eighth Session of the American Medical Association, Atlantic City, N. J., 10 1937.

¹ Snow, William and Cassasa, C S B. Obstructive Emphysema and Atelectasis in Acute Respiratory Disease of Infants. *Am J Roentgenol* 37: 217-220 (Feb.) 1937.

² Wolbach, S B. Comments on the Pathology and Pathogenesis of Fatal Influenza Cases. *Bull Johns Hopkins Hosp* 10: 104 (April) 1919.

³ Blake, F G and Cecil, R L. Studies on Experimental Influenza. *J Exper Med* 31: 403-445 (April) 1922; 69: 719 (Dec.) 1922.

Holt⁴ reported emphysema to be almost universally present at autopsy in bronchopneumonia of infants. He regarded it as compensatory, however.

MacCallum,⁵ in his textbook of pathology in 1920, not only recognized the presence of emphysema in influenzal bronchopneumonia but also called attention to the presence of atelectasis. Moreover, he believed that both were caused by partial or complete occlusion in the bronchial tree. Coryllos⁶ has been a most outstanding proponent in the advancement of the principle of atelectasis in pneumonia as of cardinal importance, the first stage being catarrhal, at which time the bronchi become plugged with a thick sticky secretion, which then results in atelectasis.



Fig. 1—Bronchopneumonia with marked obstructive emphysema causing displacement of the mediastinum into the opposite side of the chest.

Adami, in the "Medical History of the War," emphasized that the one invariable lesion encountered in the fatal cases of influenza in 1918 was a tracheobronchitis involving the region of bifurcation of the trachea. This spread both upward and downward into the main bronchi and their ramifications. The walls were intensely congested, of a purplish color with a grayish purulent exudate which could easily be wiped away. We believe that such a condition favors the development of obstructions in the bronchi.

It was from our x-ray studies of infants' chests that we first were impressed with the belief that obstructive emphysema and atelectasis were of importance in acute respiratory disease. In reviewing our experience with pathologic material we began to recognize changes parallel to those disclosed by x-ray study. At autopsy we found in the main the emphysema of the lungs anteriorly and the solid portions posteriorly. Most of the solid portions were not pneumonic because they could be inflated by blowing up the communicating bronchi which proved that they were atelectatic instead. Since the acutely ill infant is kept lying on his back secretions in the bronchial tree tend to gravitate posteriorly. This causes complete block followed by atelectasis. Less secretions are present in the bronchi anteriorly but they are sufficient to block the small bronchi only during expiration. As a result air gets into the alveoli and cannot get out giving an obstructive emphysema. The distribution of atelectasis and emphysema is not constant.

X-RAY EXAMINATION

Obstructive emphysema in infants as seen on x-ray examination usually involves a good portion of the

lobe and causes marked displacements. However, in an adult the same size bronchus reaches only a small portion of the lung. The larger bronchi are less likely to be involved in this process, so that in studying a film one cannot as a rule expect to find evidence of emphysema by displacements. Instead, one may be able to demonstrate small rounded dark zones usually from 1 to 3 cm in diameter. This is by no means an easy matter.

The x-ray appearances in the chest with influenza have been confusing. Sainte⁷ has given a very lucid description of the types of consolidation or density seen by x-ray study in influenzal bronchopneumonia from the mildest to the severest forms. Some cases show extensive confluent bilateral areas of density of the lung. The picture cannot be differentiated per se from acute pulmonary edema or bronchopneumonic tuberculosis. It is difficult to state whether these dense zones are atelectatic or pneumonic or both. The fact that they are often atelectatic can be inferred by the narrowing of the intercostal spaces, displacement of the mediastinum toward the affected side, and elevation of the diaphragm. If the interlobar pleura is thickened atelectasis will cause the line seen on the film to be curved, with the convexity toward the involvement. Emphysematous zones may be seen contrasted against the nonaerated. These may be mistaken for tuberculous cavities or bronchiectasis.

Other films show perhaps a few patches of density at the bases to which the roentgenologist hesitates to call attention, because he not infrequently sees the same changes without any apparent clinical acute illness. It is our belief that the lung which appears aerated requires special attention, because it may be involved with an obstructive emphysema. This is particularly true, in our opinion, when the patient shows marked evidence of anoxemia.

The secondary invaders, pneumococcus type III and the Friedlander bacillus in particular, tend to aggravate the obstructive phenomena, both emphysema and atelectasis, because they produce a very sticky and tenacious exudate. In some of these cases we have seen whole lobes involved in emphysema. Unless the roentgenologist knows the history the picture may be deceiving and strongly resemble the changes brought on by aspirated foreign bodies, described by Manges,⁸ Jackson⁹ and Spencer.¹⁰



Fig. 2—Influenzal bronchopneumonia. Right middle lobe shows obstructive emphysema. Pressure developed in this lobe is so great that it forces the interlobar fissure upward.

One of our cases of influenza showed obstructive emphysema of the right lobe, which disappeared when the patient recovered.

⁴ Holt, L. F. The Diseases of Infancy and Childhood. New York: Appleton & Co. 1920. pp. 492-51.

⁵ MacCallum, W. C. A Text Book of Pathology. Philadelphia: W. B. Saunders Company. 1920. p. 40.

⁶ Coryllos, L. N., and Burnham, C. L. Lobar Pneumonia Caused by a Pneumococcus Lobar Atelectasis of the Lung. Arch. Surg. 15: 160 (Jan. 1922).

⁷ Sainte, L. R. The Chest Roentgenologically Considered. Annals of Roentgenology, vol. XI. New York: Paul B. Hoeber, Inc. 1930.

⁸ Jackson, C. H., and Spencer, W. H. and Manges, W. F. The Diagnosis and Localization of Nonopaque Foreign Bodies in the Bronchi. Am. J. Roentgenol. 2: 225 (June) 1920. Manges, W. F. Roentgen Ray Diagnosis and Localization of Nonopaque Foreign Bodies in the Air Passage. Am. J. Roentgenol. 2: 304 (May) 1922. Manges, W. F. Roentgen Ray Diagnosis of Nonopaque Foreign Bodies in the Trachea. Am. J. Roentgenol. 2: 429-431 (May) 1922.

CLINICAL OBSERVATIONS

In the light of the pathologic and x-ray studies that have been presented, the symptoms and physical signs may be more rationally fitted into the picture. Only a few points will be mentioned.

In the presence of influenza, cyanosis and dyspnea would indicate that obstruction to the bronchial tree is taking place. This may be far out of proportion to the extent of the elicited dulness. In such cases obstructive emphysema may be dominant. The x-ray study can be very misleading if a few patches of density alone are blamed.

Scattered patches of lung density may give no physical signs of dulness because of the interspersed emphysema. This was brought out by Wessler and Jach⁹ in their discussion of bronchopneumonia in children.

It is very likely that the tympanic note heard above a consolidated zone is not due to relaxation of the lung, as has been suggested in the past, but rather to adjacent obstructive emphysema.

Clinically the patches of dulness are known to appear and disappear quickly in different zones. It has been very disconcerting to those who were not aware of this.

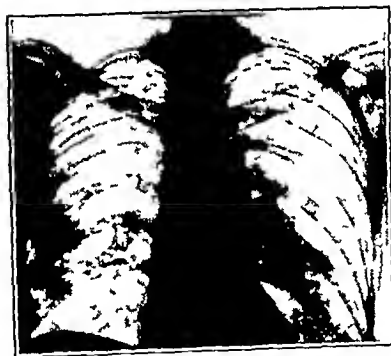


Fig. 3.—Influenzal bronchopneumonia. Patchy density due to atelectasis. Adjacent rounded aerated zones due to obstructive emphysema resembling bronchiectasis or tuberculous cavitation.

One of our colleagues, Dr. Emil Koffler, likes to tell the story that during the war epidemic he insisted on examining his patients in conjunction with the consultant because he knew that if he reported the physical signs of the previous day they might no longer be present.

In the light of obstructive emphy-

sema and atelectasis as a dominant factor in influenza the necessity for oxygen therapy becomes apparent. The use of expectorants and fluidifiers of the sputum should perhaps be studied again. The question of whether to increase the cough reflex or decrease it with sedatives should be reconsidered. Other problems for study may present themselves.

A child was recently brought into the emergency service of Harlem Hospital obviously suffering from an acute respiratory infection. The admitting physician made a diagnosis of acute bronchitis and since the child did not look seriously ill he sent it home. In eight hours it was dead. This is a classic picture that Cassasa has been meeting in his work as a medical examiner for the city of New York. We believe that these patients die from bronchial asphyxiation.

The conclusion can be drawn that any condition causing excessive accumulations in the bronchial tree, whether this is produced by allergy, infection, irritating vapors or various causes of pulmonary edema, is ideal for obstructive emphysema and atelectasis. This may be of such rapid occurrence that death takes place

before those who are in attendance can realize what is happening. Influenza is especially prone to produce such a picture.

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ABSTRACT OF DISCUSSION

DR. E. G. GALBRAITH, Toledo, Ohio: Atelectasis was produced by plugging the bronchus with a plug made from a rubber bath sponge. This work was done on dogs and then the dogs were killed at intervals ranging from thirty minutes to thirteen days after the obstruction was produced. In killing the dogs we injected iodized oil into the external jugular vein, which was immediately carried to the pulmonary artery, in an effort to demonstrate the presence of a filling defect in the vessels. This demonstrated rather clearly the steps that follow in the production of atelectasis. The first thing noted in the cases in which the obstruction had been present thirty minutes was a congestion of the blood vessels in the alveolar walls long before the alveolar walls were collapsed. This process gradually progressed until finally the air was absorbed and the typical pathologic picture of atelectasis resulted. From that point on, it was a question of atelectasis plus infection which always followed. The infection started in the bronchus and spread to the parenchyma and soon resulted in a definite pneumonitis, which if allowed to go on long enough, resulted in multiple abscesses and necrosis. In the early cases of atelectasis, no demonstrable defect in the filling of the pulmonary artery could be demonstrated, but within twelve hours it could be noted that the terminal arterial branches did not fill. This was interpreted to mean that they were already filled with blood and for that reason the iodized oil could not enter the terminal branches. It was concluded that the real mechanism in the development of atelectasis was a result of the lack of motion which takes place during the inflation and deflation of the lung and that atelectasis follows in this condition regardless of what produces it. Of course, in bronchial obstruction there is no inflation and hence no deflation to move the column of blood along, in other words, to empty the pulmonary veins. I feel that if for any other reason the lung fails to inflate and deflate, the same picture results. The chests of these dogs were roentgenographed and frequently in the early cases atelectasis did not show on the x-ray plate with the technique used. It was only after infection was superimposed that the atelectasis showed up well on the x-ray plate. I feel as Dr. Snow does that, if the conclusions I have drawn are correct the treatment is inflation. If there is obstruction present in the bronchus, that must be removed before the lung can be properly inflated.

DR. LE ROY SANTE, St. Louis: There is no doubt in my mind that atelectasis and obstructive emphysema play a greater part in the course of various diseases of the lung than we really give it credit for. I am sure that the autopsy and the pathologic material in various diseases bear this out many of the roentgenographic manifestations of tuberculosis, for instance, are undoubtedly due to associated atelectasis. Again, I am sure that I have made similar observations in infants to that referred to by the authors, that is, that infants constantly lying on their backs accumulate bronchial secretion posteriorly resulting in atelectasis of the lung with the accompanying compensatory emphysema of the anterior portion. Pediatricians have referred to this many times, stating that the conditions which they observed after they disturbed the child and brought him to the x-ray department for examination were entirely different from the ones they had obtained while the child was in bed. In a few instances they have actually been able to demonstrate on a film the obstructive emphysema and atelectasis that have occurred. There is however one conclusion that I have in mind as an exception to, and that is the statement that obstructive emphysema and atelectasis occur as a result of influenza. If the authors had said in children in place of influenza I would be willing to accept it but when they say in influenza I think that it at least conveys the impression that these changes occur as an ordinary grip as a direct result of the influenzal involvement. I think that perhaps the greatest factor is the debility of an infant rather than that it occurs as an actual accompaniment

⁹ Wessler, H. and Jach⁹ Leopold. *Clinical Roentgenology*, of Diseases of the Chest. Troy, N. Y. Southworth Company, 1923, p. 223.

of influenza. The authors have referred to emphysema and spoke of various different types of emphysema. If one is going to speak about the development of these changes and try to give x-ray evidence of their presence it is necessary to define one's terms. For instance, when one speaks of it as occurring in influenza one has to define what one means by influenza whether the ordinary common type of grip that is prevalent all the time or epidemic influenza of 1918-1919 and 1920 to which the authors have referred in which the main pathologic changes were due to the activities of other associated invading organisms. Waters showed some years ago that the x-ray appearances in ordinary grip consisted merely of an increase in the root shadows and the lung markings of both lungs.

DR ROBERT G. TORREY, Philadelphia. In 1918 Grosh of Toledo and I observed a large number of cases of influenzal pneumonia at Camp Hancock, Georgia, with 150 careful autopsy studies, and briefly we came to the following conclusions: Influenza is a disease of which the primary expression is an invasion of the lung alveolus with a weakening of its structure. Uncomplicated by other infections, it is a relatively mild disease. Complicated as it was in different camps and different cities by various other epidemic infections, as the hemolytic streptococcus, *Staphylococcus aureus* the Pfeiffer organism and the pneumococcus the disease gave different clinical and different roentgenologic pictures. We made a report entitled

Acute Pulmonary Emphysema Observed During the Epidemic of Influenzal Pneumonia, calling attention to these points: Epidemic influenza weakens the lung structure. If there is much coughing and strain, acute emphysema results. This may be only vesicular, or it may be also interstitial resulting in mediastinal and subcutaneous emphysema. If one lobe is over-distended another lobe must be relatively collapsed. This makes a confusing picture. The hemolytic streptococcus produces an intense bronchitis and peribronchitis. These dense infiltrates may give an x-ray picture indistinguishable from tuberculosis. The bronchial and pulmonary changes in influenzal streptococcal pneumonia are destructive not exudative, and repair is accomplished by fibrosis. The x-ray picture in the convalescent is distinctive. Mediastinal emphysema in the acute stage may show a spreading and convexity of the root shadows that are characteristic. The acute emphysema determines to a considerable extent the type of emphysema complicating recovery. These collections are apt to be located interlobar or in vertical columns forced into these locations by the over-distention of the lungs. A lobe which is over-distended or collapsed may be fixed in that state by a complicating lobar pneumonia.

DR WILLIAM SNOW, New York. I must again emphasize that we feel that emphysema in influenza is obstructive. I believe that the slides of roentgenograms that I showed brought out the point. There were seen displacements involving the mediastinum, the diaphragm and the interlobar fissures. In some instances I think one could see the widening of the intercostal spaces. Now in our opinion compensatory emphysema will not cause displacements. Obstructive emphysema implies increased tension distal to the obstruction and this can produce the picture we have presented and described. Though there may be a little difference of opinion we feel that atelectasis and emphysema in acute respiratory disease should be considered as an obstructive condition so far as it puts the lung out of condition. This approach is advantageous because it gives a method of attack which should be of real value to the clinician, the roentgenologist and the pathologist.

Dementia Praecox and Habits of Adjustment—In 1896 Moyer at the Worcester Hospital first started to develop his conception of dementia praecox as depending on a special constitution and personality likely to break down in specific manners. He stated the general principle is that many individuals cannot afford to count on unlimited elasticity in the habitual use of certain habits of adjustment and that the type of adolescent deterioration can very largely be traced to disharmonies of thoughts or habits and of interests which bring about a stunting in one direction or another.—*Miles Pompei*. *Dementia Praecox*. *Preventable Psychiatric Quart* 11:552 (Oct.) 1937.

PTOSIS AND ITS SURGICAL CORRECTION

EDMUND B. SPAETH, M.D.

PHILADELPHIA

Blepharoptosis, commonly spoken of ophthalmologically as ptosis, is the inability to raise the upper lid owing to paralysis or paresis of the levator palpebrae superioris muscle. Some congenital cases, especially those which are accompanied by a paralysis of the superior rectus have an anatomic defect present which is not purely innervational or paretic.

Ptosis may be congenital, may follow trauma, may continue as a part of the residuals of an inflammatory condition of the orbit or may be a part of a complete or incomplete external ophthalmoplegia, either central or peripheral in origin. Surgical ptosis should be considered as any one of these cases which is stationary, which cannot be corrected by any medical treatment and which impairs vision. Such a degree simply means that the weakened muscle is unable to raise the lid.

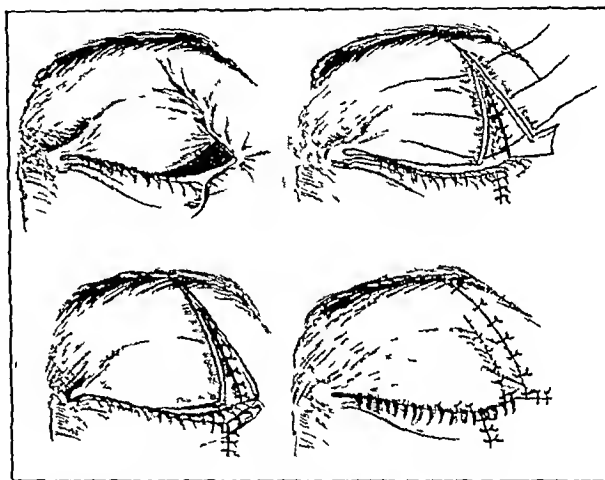


Fig. 2—Surgical technic necessary for the correction of a condition such as shown in figure 1.

against the resistance of the orbicularis palpebrae muscle plus the weight of the lid itself. Cicatrices in the upper lid and at the canthi may simulate a ptosis but, as long as the levator palpebrae superioris is not itself paralyzed, the correction of these cicatricial forms of ptosis is a simple matter of scar resection and of suture sufficient to permit the levator to function again as it should (figs. 1 and 2).

This paper has as its single reason the plea for diversified surgery in the correction of this condition. Terson has been aptly quoted as saying that "it is only with precise appreciation of the peculiarities of the individual case that one may hope to succeed in this delicate and special surgery of the lid." A correct diagnosis as to the character of the ptosis and an exact estimate of its degree are prerequisites to a satisfactory outcome.

For the moment three muscles of importance must be considered for the basis of all surgery for ptosis.

From the Peter Clinic, Graduate Hospital, University of Pennsylvania Graduate School of Medicine. Read before the Section on Ophthalmology at the Eighty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June 11, 1937.

Owing to lack of space this article has been abbreviated in *THE JOURNAL* by the omission of several illustrations. The complete article appears in the author's reprint.

exists in the utilization of one or more of these. The peculiar and important fact is that each muscle, when used, gives a maximum correction only under certain definite circumstances, or, reversing this statement, certain circumstances when present indicate definitely the necessity for utilizing one of these, if not exclu-

into the orbicularis oculi and the skin of the upper lid, the second into the upper border of the superior tarsal plate, the third into the conjunctiva and the fourth into the upper border of the margin of the orbital opening, that is, fusing with the septum orbitale in this manner (figs 3, 4, 5, 6, 7 and 8).

The superior rectus is histologically and embryologically in very close association with the levator and one can see how either could be utilized to replace the other (figs 9, 10 and 11).

The third, that is, the occipitofrontalis, is truly an accessory muscle of lid elevation in the course of its fibers and in its normal function. Each muscle can be subdivided into two portions—an occipital and a frontal. The frontal, which is the part of interest to ophthalmologists, is quadrilateral arising from the epicranial

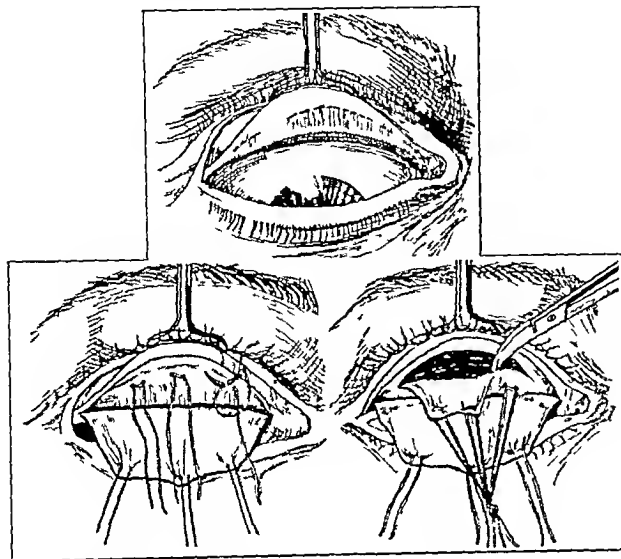


Fig 3—Blaskovics technic for resection and advancement of the levator

sively at least to a major degree. The muscles are the levator palpebrae superioris, the occipitofrontalis, with the corrugator supercilii, and the superior rectus.

The peripheral distribution of the levator is of special interest through its fascial sheath, in common with the superior rectus, and the manner in which the belly of

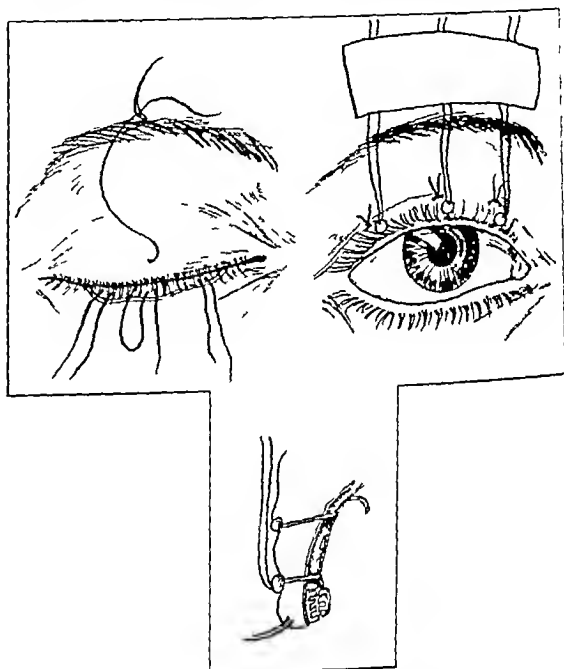


Fig 5—Blaskovics technic for resection and advancement of the levator

aponeurosis and by this insertion into the skin at the eyebrow, interdigitates very closely with the fibers of the orbicularis and with those of the corrugator supercilii (figs 12, 13, 14 and 15).

Ptosis must be divided into two types of cases, those with and those without the surgical relationship which are being considered. Certain cases lie in a borderland between surgical and nonsurgical indications. For instance, one would not consider the correction of ptosis resulting from an intracranial neoplasm until the condition is in a state of a more or less permanent cure. A similar case is one of complete external ophthalmoplegia, either unilateral or bilateral (fig 16). In such instances diplopia would result and the cornea would probably be lost from consequent exposure and from drying. As far as contraindications are concerned the ptosis of myasthenia gravis is probably the best example of an absolute contraindication to surgery. In this condition the degree of ptosis is always changing. Intervals are present when there is no ptosis, and at other times the ptosis may be practically complete. The most classic of cases presenting a pure surgical relationship is that of congenital ptosis with an isolated paralysis of the levator palpebrae superioris.

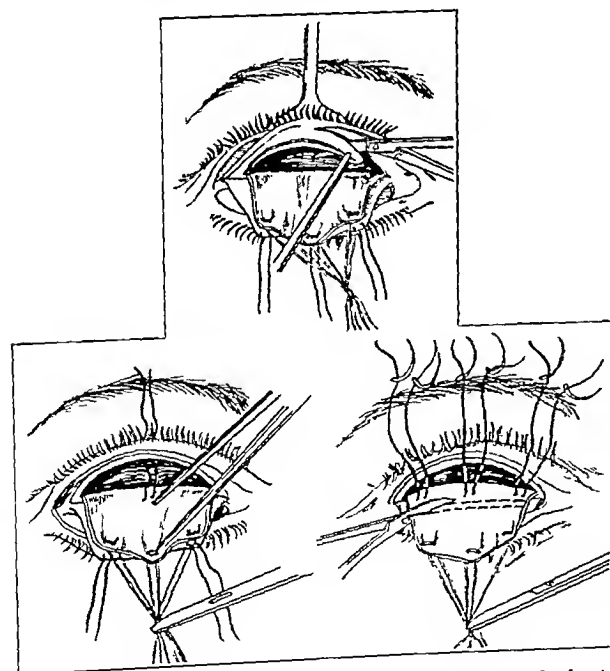


Fig 4—Blaskovics technic for resection and advancement of the levator

the levator splits off from the superior rectus. This illustrates the reason for poor levator action in congenital ptosis when combined with poor superior rectus action. The common nerve supply to them is equally relevant. The fibers spread out in a fanlike aponeurosis and are inserted in a fourfold manner—one portion

Four general procedures are available. In spite of this the greatest good will be obtained from those surgical measures which do not rely for their success on a simple feature or principle but usually on a well considered union of two or more possibilities. In this manner one is not obliged to exaggerate a particular step and to risk, for example, the production of unsightly lagophthalmos, but one is able instead to obtain a maximum effect with a minimum disturbance of any one of the parts involved. The possibilities are shortening of the eyelid itself, advancement or advancement with resection of the levator, replacement of the levator by the occipitofrontalis, and last, the utilization of the superior rectus.

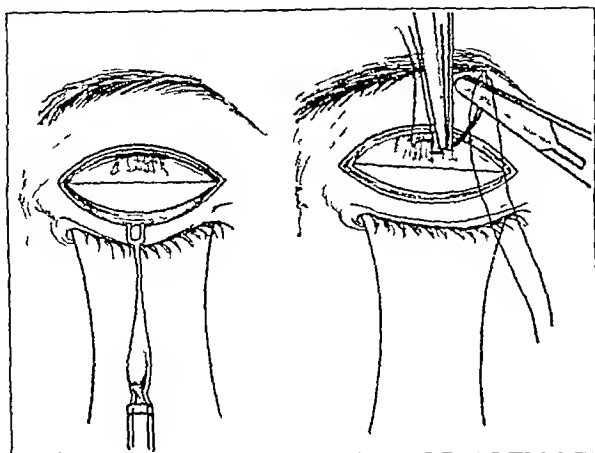


Fig 7—Technique of the Everbush resection and advancement of the levator

The first of these is usually quite unsatisfactory. Some correction is obtained from a tarsectomy but only in very moderate degrees of spacial ptosis cases. In the final analysis this amounts to a levator advancement (figs 17 and 18). Simple skin resections are futile for, if sufficient skin is excised to correct the ptosis, lagophthalmos and ectropion will develop. With the three remaining procedures to be considered each type of operation is best applicable to certain definite cases and not one of the three lends itself to all the cases that appear for correction. Furthermore, unilateral ptosis must be handled quite differently from bilateral ptosis. The ptosis of infants whether bilateral or unilateral must be treated quite differently from that of adults or even of older children. Patients with ptosis having some levator action still present should be operated on by some method which utilizes this to its fullest extent.

The operative procedures that have been presented are innumerable. Some of them are delightfully simple and usually of no great value. Others are rather complicated and do not offer unusually good results to compensate for the difficulties present in the technique outlined.

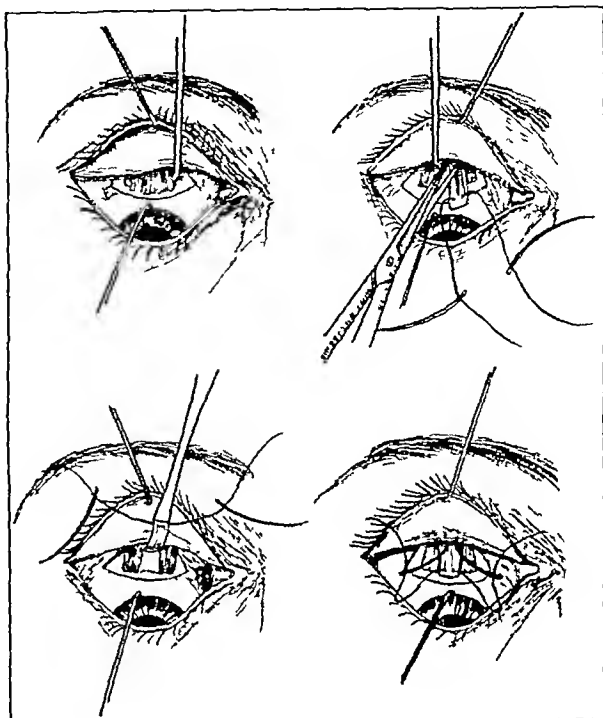


Fig 9—Original Motais technique

The ptosis of infants must be corrected, especially if bilateral, as soon as the infant begins to walk. The child will soon learn to throw back his head and develop thereby a faulty posture and a spinal curvature which

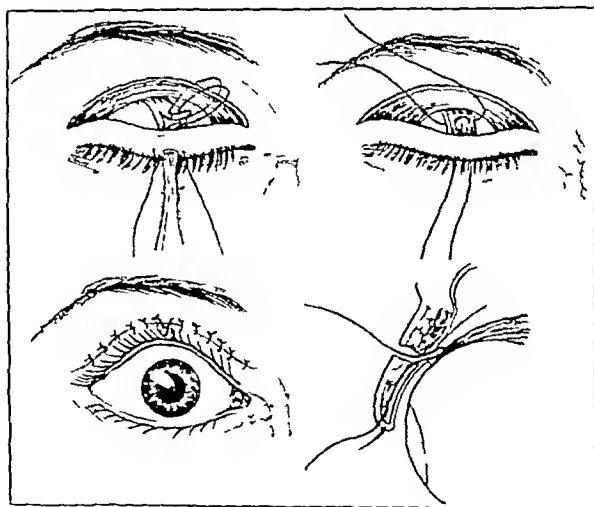


Fig 10—Kirby's and Shoemaker's modification

is quite distressing to see owing to the hyperextension of the head neck and spine. Crutch glasses may be used here as a stop-gap. I have done this with full satisfaction thus being able to postpone the ptosis operation until the fourth or fifth year of the infant's life. Unilateral ptosis cannot be operated by the utili-

zation of the superior rectus muscle. While the Motaïs-Parmaud procedures are based on sound physiologic and scientific bases, if the operation is successful for the correction of the ptosis a unilateral hypophoria is almost certain to develop. Too often the absence of such a hypophoria means, as well, an unsuccessful ptosis

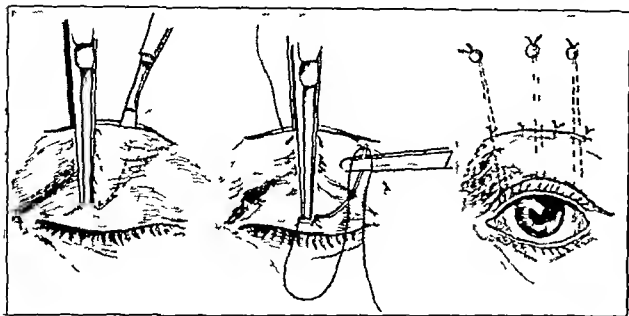


Fig. 12—Technic of the Hess operation

operation. There are other factors to be considered in connection with the Motaïs operation. Success in its application depends on the normal integrity of the superior rectus. A large number of cases of congenital ptosis are accompanied by an insufficiency of this muscle. Hence a careful study of the upward ocular rotations must be made before the operation. The original Motaïs procedure calls for the dissection of a central tongue of muscle tissue from the superior rectus, this to be transplanted into the upper lid for a twofold purpose: (1) to hold the upper lid up and (2) to permit further elevation of the upper lid as the eyeball is rotated upward. It is absurd for one to think that this tarsus-superior rectus adhesion functions as

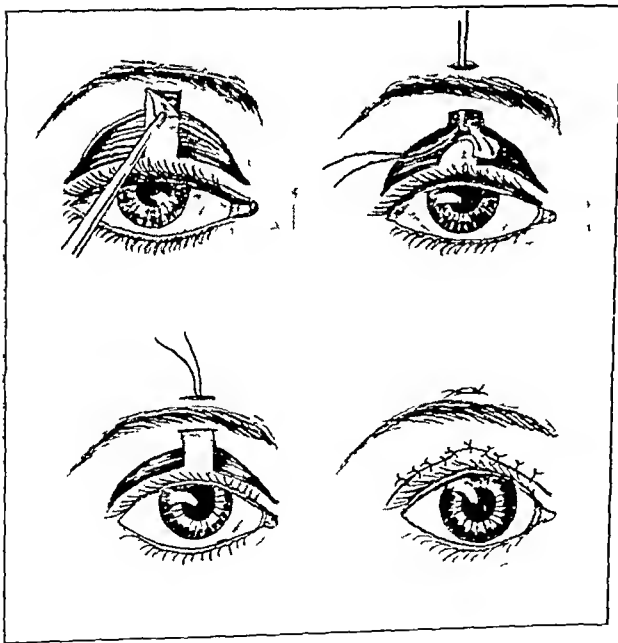


Fig. 14—Technic of the Hunt-Tansley operation for ptosis

a strip of muscle. As Shoemaker said, "It can act only as a cicatricial adhesion of the tarsus to the superior rectus." If this is believed, the rationale for some of the more recent modifications of the ptosis operation, such as Shoemaker's and Kirby's is logical. The deepening of the orbitopalpebral fold that occurs with the Motaïs operation is quite satisfactory. The eye is

rather prone to remain open during sleep, however, following a Motaïs operation more so with this than with any other of the operations. The reason is plain for the upward rotation of the eyeball, physiologically present in sleep, must also elevate the adherent lid. Winking, furthermore, may be rather difficult following this operation, for the eyeball normally remains fixed during the process. The attachment of the upper lid to the superior rectus now limits this in that the movement of the upper lid is quite dependent on the movement of the superior rectus.

Surgery that utilizes the occipitofrontalis has no effect on the levator palpebrae superioris. As Beard¹ states, "the frontalis owes its power of lifting the eyebrow to the fact that its attachment is essential to the skin, hence, procedures that call for deep or extensive incisions and other traumatism in the superior orbital region must result in scars that inevitably limit the natural movement of the parts."

The utilization of the occipitofrontalis, when properly used and with the proper indications, is a very nice

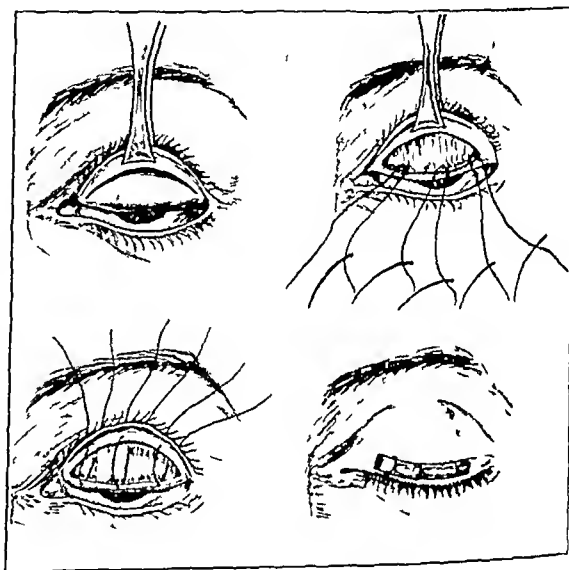


Fig. 17—Wheeler's technique for a tarsus resection

procedure. For unilateral ptosis, however, it does result in a peculiar facial grimace not wholly beautiful to view. Furthermore, the occipitofrontalis is rather likely to contract bilaterally in the largest number of cases. Hence, with unilateral ptosis the palpebral fissure of the normal eye would be widened. Still this fault, while unfortunately present, does not contraindicate the utilization of the occipitofrontalis when proper indications are present.

Surgery applied to the levator is ideal. Two conditions, however, qualify the permissibility of surgery to the levator. The presence of cicatrices, cicatricial contractions, and stab wounds and lacerations which have already sectioned the levator contraindicate surgery. There should be some levator action present if ideal results are to be obtained. The futility of surgery on the levator as "an all around procedure" lies in the fact that in a great number of cases the muscle is either absolutely inert or so insignificant in its power that satisfactory correction may not occur. Lindner² in his discussion of the Blaskovics operation for ptosis tells

¹ Beard, C. H. *Ophthalmic Surgery*, ed. 2, Philadelphia: J. B. Lippincott & Co., 1914, p. 246.
² Lindner, K. *Klin. Monatsbl. f. Augenheilk.* 9: 1 (July) 1934.

that even in complete paralysis of the levator the shortening of this muscle, plus the tarsectomy, gives results which are adequate for the greatest number of cases

Procedures Indicated for Ptosis

	Condition Present	Unilateral	Bilateral
A	Infants up to the age of 3 years	Crutch glasses	Crutch glasses
B	Children 3 to 5 years of age	Huot Tansley procedure utilization of occipitofrontalis	1 Hunt Tansley procedure utilization of occipitofrontalis 2 Modification of Motais
C	Children 5 to 15 years of age	1 Blaskovics if levator action is present 2 Huot Tansley	1 Blaskovics 2 Modification of the Motais
D	Adults uncomplicated and with levator action present	Blaskovics or some modification of a levator advancement	1 Modification of Motais 2 Blaskovics or some modification of a levator advancement
E	Adults bilateral without levator action but with superior rectus intact		1 Modification of the Motais 2 Resection with advancement of the levator (see Lindner's statement)
F	Adults unilateral without superior rectus or levator action of any degree acquired paralysis	1 Use of fascial sling utilization of occipitofrontalis 2 Hess' direct anchorage to occipitofrontalis 3 Hunt Tansley	
G	Adults bilateral without superior rectus or levator action of any degree acquired paralysis		1 Resection with advancement of the levator (see Lindner's statement) 2 Use of fascial slings 3 Bilateral Hess
H	Trachomatous ptosis	1 Tarsus and culdesac resection with advancement of the levator	1 Tarsus and culdesac resection with advancement of the levator
I	Children with acquired paralysis and without uncorrected or accompanying external ophthalmoplegia correction depends on the degree of involvement	1 Utilization of sutures which form permanent cleidral tracts 2 Hunt Tansley operation 3 Hess' all occipitofrontalis action	1 Utilization of sutures which form permanent cleidral tracts 2 Hunt Tansley operation 3 Bilateral Hess
J	Adults with conditions as in I (correction depends on degree of involvement) (complete third nerve paralysis—see L)	1 Utilization of sutures which form permanent cleidral tracts 2 Utilization of fascial slings 3 Hess 4 Muscle surgery with the superior oblique	1 Utilization of sutures which form permanent cleidral tracts 2 Utilization of fascial slings 3 Bilateral Hess
K	Ptosis with incomplete external ophthalmoplegia	1 Utilization of sutures which form permanent cleidral tracts 2 Crutch glasses 3 If no operation	1 Utilization of sutures which form permanent cleidral tracts 2 Crutch glasses 3 Bilateral Hess operation
L	Ptosis with complete ophthalmoplegia	Crutch glasses	Crutch glasses
M	Cicatricial ptosis	1 Sear resection and suture 2 Lid shortening operation (Lid vertical operation)	
N	Ptosis following long standing enucleation	1 Blaskovics or some similar levator muscle procedure 2 Lid shortening operation (Lid vertical operation) also a levator procedure 3 Sear resection	
O	Ptosis with neurofibromatosis	1 Tumor resection 2 Hunt Tansley with resection of the redundant tissue 3 If no operation	

is a very fine procedure and, used as indicated, gives most satisfactory results

A summarization of the procedures indicated for ptosis would in general give a classification similar to that in the accompanying table

The utilization of one or more procedure in a single case is not at all uncommon. This is especially true when one considers the correction of the complicated forms of ptosis (figs 19 and 20). Cicatricial ptosis, ptosis following long-standing enucleations, trachomatous ptosis and ptosis with neurofibromatosis are illustrations of these. Frequently a ptosis remains following the reconstruction of a socket and following complete blepharoplasty. While these special conditions can be included in the four groups just mentioned, it is relevant to call the reader's attention to them as well.

The selection of the operation that is to be used for an individual case is perhaps the most important point

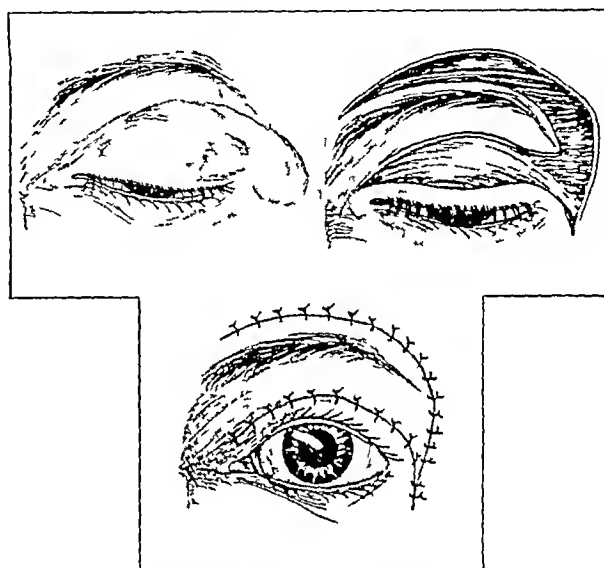


Fig. 20—Skin resection to illustrate the initial correction necessary for the correction of the ptosis of neurofibromatosis

in ptosis surgery. None of the procedures are difficult. If an improper or ill advised operation is used in a single case, the best of technique in the performance of this operation will not give as satisfactory results as the proper operation would give even if it were done with less surgical finesse.

CONCLUSION

This most pertinent statement is reiterated. The surgical treatment of ptosis must be as variable as are the causes of ptosis and the other many circumstances connected with it. No one technique can combat more than one set of conditions. Each of the three major procedures must be utilized as the occasion demands. This is a universal surgical principle regardless of whether the problem is ophthalmologic, abdominal or orthopedic in nature. Beard's statement, "all who have had much experience in this branch of ophthalmic surgery will agree that the results of ptosis operations taken all in all are far from brilliant" is unfortunately true. It need not continue as a fact however, if as much attention is paid to the diagnosis and the complicating circumstances of this condition as is paid to the various possible characteristics connected with glaucoma and cataract.

1930 Chestnut Street

Considering the classification herein in such instances this must necessarily be a combination of two of the basic principles mentioned: (1) a shortening of the lid itself and (2) surgery on the levator. In general however levator surgery either advancement or resection

ABSTRACT OF DISCUSSION

DR FERRIS SMITH, Grand Rapids, Mich. Dr Spaeth has made a plea for the desirability and necessity of diversified surgical technic in correcting ptosis. He has presented an exhaustive analysis of the anatomy, pathology and surgical procedure involved in such correction. His is the attitude of a practitioner with a sound background, good judgment, splendid technical ability and surgical imagination. He provides for all types of lesion, some of which will come rarely into the experience of the average specialist. The entire consideration presumes the availability of a method which permits the operator to control, with exactness, not only the mechanical features of the repair but also its subsequent course to an end result. Most of the procedures proposed do not permit of such control. The fact that fifty-seven different procedures have been described for correction of this lesion is sufficient proof that many of these result unsatisfactorily. The great majority of cases may be easily classified as to causative defect and an appropriate corrective procedure selected. The net of this consideration may be set up as follows: There are two objectives to obtain function and to produce a cosmetic result; the latter consequent on the former. Lesions resulting from trauma, in which both muscles are paralyzed require the careful study and skilful management indicated by Dr Spaeth, while those resulting from central nervous lesions may require similar consideration, or, more frequently, no consideration at all.

DR DANIEL B. KIRBY, New York. I examine the width of the palpebral fissure in the primary position and then compare it with the width when the eye is directed upward and again when the eyes are directed downward. I also take pictures of patients for photographic report in every case. I examine the length of the fissure, the horizontal and also the marginal length as applied to the lower lid. An ideal case is one which in the congenital form has a partial development of the function of the levator or, in the acquired case, a partial remnant of the function of the levator. In these cases the resection procedure as applied to the levator by the conjunctival route is indicated. In cases in which there is complete or almost complete paresis of the levator with a palpebral fissure which actually narrows when the patient looks up because the lower lid follows the globe in elevation and the upper lid does not, there is a definite indication for the employment of the Mota's principle of transplantation of the superior rectus. In cases in which there is complete paralysis of the levator and superior rectus and in addition paralysis of the inferior oblique the condition is called paralysis of elevation by Dr Wheeler. The eye is in a position of hypotropia and cannot be used even though the ptosis is corrected. It is necessary to lift both the globe and the eyelid using the procedure devised by Dr Wheeler of resection and advancement of the superior rectus and advancement of the inferior oblique over the orbital margin. This will tense the remnants of the muscles even though no muscular action is produced and will elevate the globe. Then the Mota's or Parinaud principle may be employed to elevate the lid. Traumatic and new growth cases require special consideration. This covers the field of ordinary ptosis surgery and leaves no need for the employment of the frontalis in any case. It is true that the average ptosis patient will hold back his head, arch his brows and wrinkle his forehead in the effort to get the curtain of the lid above his pupil. This is undesirable and gives the typical curious expression. After the use of the frontalis this expression is continued. The upper eyelid normally slides back over the convexity of the globe as does the top of a roller desk. Attachment to the frontalis lifts it in an unnatural, straight vertical manner.

DR EDMUND B. SPAETH, Philadelphia. The reason for this presentation and the scientific exhibit is a statement which was made in my presence at the Kansas City meeting last year. A certain man said he uses the Hess operation for everything and gets full satisfaction. It was to refute such an erroneous and mischievous statement that I prepared this paper and the exhibit. As to the sling operation that Dr Smith mentioned, I believe that Dr Derby was first to discuss the use of fascial slings long before Dr Blair continued it in his ingenious use of fascia for various facial defects. Dr Smith was unnecessarily polite in saying I had forgotten the Trainor operation. I have found that it produces adhesions in fact, a symblepharon

between the superior rectus and the upper lid. I have done this twice and had to cut these adhesions loose in both instances. I am grateful to Dr Kirby for calling my attention to the palpebral fissure. That is very interesting. It should eventually further classify various indications for some procedure or, at least, so far as limiting further the indications for the Hess procedure. The same thought applies to Young's operation, that a symblepharon-like limitation occurs here. The Mota's or a modification of it, gives a longer cicatricial attachment without the limiting adhesions.

ENDOCRINE THERAPY IN CHRONIC CYSTIC MASTITIS

DEAN LEWIS, MD
AND
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BALTIMORE

The term chronic cystic mastitis, not accurate in the strict sense, is applied to a benign lesion of the breast which is thought by many to be precancerous in nature. It is neither inflammatory nor strictly neoplastic. Recent studies would seem to indicate that the change in the breast in this disease are associated with disturbances in some of the glands of internal secretion.

Chronic cystic mastitis in its later clinical stages may be divided into two types: cystic disease characterized by the development of a number of cysts of appreciable size and adenosis¹ characterized by proliferative changes resulting in the formation of many nodules in both breasts—so-called shotty breast. Study of a large series of cases reveals an indifferent stage of chronic cystic mastitis common to the early phase of both cystic disease and adenosis. This indifferent stage, often referred to clinically as painful breasts or mastodynia, is more commonly the forerunner of adenosis than of cyst formation. Difficulty in distinguishing between these three clinical varieties of the disease has interfered with the interpretation of the pathologic changes in the breast and their correlation with endocrine physiology.

PAINFUL BREASTS

A frequent precursor of the lesion that may develop into true cystic mastitis is the painful breast. This condition is characterized by cyclic pain, which reaches its maximum intensity before the menstrual period. In the early stages the painful and tender tissue is usually in the upper and outer quadrants and feels like a flat granular area of increased density. Menstruation is usually regular, the patient is in her thirties and either is childless or has not been pregnant for five or more years. In married women with this complaint there is a high percentage of sterility. Mammary pain and tenderness, which is at first slight and premenstrual, becomes more severe and finally lasts throughout the entire cycle. Fear of cancer is often aroused and an area of increased density may be palpated in the breast. These patients are usually not undernourished and are not of the nervous type. The granular or nodular area of increased density which at first varies at different periods of the menstrual cycle may persist. Spontaneous regression may occur, but often adenosis and less frequently cystic disease supervene after a period of months or years.

This work was aided by a grant from E. R. Squibb & Co. From the Surgical Clinic and the Department of Surgery, Johns Hopkins Medical School and Hospital.
1. Lewis, Dean and Geschickter, C. F. Ovarian Steroids and Their Relation to Chronic Cystic Mastitis. *Am. J. Surg.* 24: 249 (May) 1912.
2. Cheate, G. J. and Cutler, Max. Tumors of the Breast. Edward Arnold & Co. 1911.

This early stage of chronic cystic mastitis characterized by persistent painful breasts may be successfully treated by endocrine therapy (usually estrogen administered intramuscularly twice a week in doses of 10,000 international units over a period of several months). In this paper only those cases which had not responded to the use of various types of breast supports, to ointments or to endocrine substances used in improper doses are included. In all there were ten such cases of persistent painful breasts treated. The majority of these patients were treated during 1934 and 1935 and a period of several years has elapsed in which to observe the results of treatment. The data on these cases are summarized in table 1. Two typical cases in which estrogen therapy was given are reported.

CASE 1—D B, a white woman, aged 36, was married but had no children. Her menstrual periods were regular. She had had one miscarriage twelve years before. For three years there had been pain in the breast associated with menstruation which had gradually become worse and more prolonged. The patient was able to feel small masses and experienced tenderness in the outer and upper quadrants of both breasts. On examination

1935 she received 60,000 international units of estrogen. She continued to take estrogen by mouth on alternate months for a period of one year. Palpation of the breasts gave negative results after this treatment and pain and tenderness disappeared. She was well when examined in September 1937.

In case 3, pituitary lactogenic substance was given.

CASE 3—A S, a white woman, aged 36 married had three children the youngest being 2½ years old. The menstrual periods were regular but were preceded by pain in the right breast. The patient complained of pressure on the ribs and pain in the breast. Both breasts transilluminated clearly. Neither was shotty but both were rather full and soft and of a doughy consistency seven days after the last period. The thyroid had been enlarged for some years. The patient complained of pain in the right breast which passed from above downward and radiated into the right arm. She had lost about 5 pounds (2.3 Kg.), and an indurated granular area about 5 cm in diameter could be palpated where the pain was felt. In December 1934 and January 1935 the patient received 20,000 international units of estrogen. She still could feel the indurated mass in the right breast. She said that this was tender. Three hundred and sixty bird units of pituitary lactogenic substance was administered in April 1935. In December 1935 the

TABLE 1—Endocrine Therapy in Bilateral Persistently Painful Breasts

Patient	Age	Menses	Condition and Duration	Therapy*	Result
D B 1934 married 1 miscarriage	36	Regular	Pain eaking outer upper quadrant for 3 years	Fetrogen 100 000 international units in 6 months	Well Jan 1937
F S 1934 widow no pregnancies	28	Regular	Pain early shotty for 3 years	Estrogen 60 000 international units in 7 months estrogen by mouth 1 year	Well Feb 1937
I McC 1936 married 1 miscarriage	31	Regular	Caking outer upper quadrant pain for 4 years	Estrogen 110 000 international units in 6 months	Well May 1937
M F 1935 single no pregnancies	39	Intramenstrual bleeding	Pain early shotty eaking mid upper for 2 years	Estrogen 45 000 international units in 1 month	Well after 1 month of treatment Jan 1937
A S 1934 married 3 children	36	Regular	Pain lumpy one dense area thyroid enlarged for 1 year	Estrogen 20 000 international units in 1 month prolactin 360 bird units in 2 weeks	Well 1937
I S 1935 married no pregnancies	21	Intramenstrual bleeding	Pain and dense area in outer upper quadrant for 2 months	Prolactin 540 bird units in 2 weeks	Well 1937
I T 1935 married 1 child	26	Irregular	Pain eaking outer upper quadrant for 5 years	Prolactin 600 bird units in 3 weeks	Well Oct 1936
A B 1936 married no pregnancies	53	Artificial meno pause at 34	Pain and lumpy for 1 year	Estrogen 140 000 international units in 4 months	Well May 1937
M T 1937 married no pregnancies	29	Regular	Dense areas moderate pain 1 week	Estrogen 140 000 international units in 4 months	Well May 1937
T R 1937 married 1 ectopic 1 stillborn	36	Irregular	Pain and disappearing lump	Estrogen 70 000 international units in 2 months	Improved May 1937

* Injections of estrogen in international units given twice weekly

both breasts were enlarged beyond the normal. They transilluminated poorly. Both breasts had a definite edge and were shotty. There were granular, flat and lumpy areas but no definite nodules were present. The patient was examined by Dr Bloodgood in April 1933 and again in October 1934. During this period although the patient was assured that her condition was not serious the pain was unrelieved and the dense areas and shottiness persisted. Estrogen therapy was begun in October 1934, the patient receiving 20 000 international units in one month. In 1933 for the first six months she received 10 000 international units a month. At the end of this time the lumpiness and pain in the breasts disappeared and the patient has remained well. She was last seen in August 1937.

CASE 2—E S, a white woman, aged 28 a widow with no children had regular but painful menstrual periods. She complained of pain in both breasts of three years duration the pain being worse before and less after her periods. She was seen by Dr Bloodgood in August 1934. He found both breasts larger and more lumpy than normal. He characterized both as shotty with a definite edge but not of the advanced Schummelbusch type. Because support of the breasts did not relieve the pain or lumpiness she was referred here for endocrine therapy. At the beginning of treatment there was increased density and tenderness in the outer and upper quadrants particularly in the left breast. The remainder of both breasts had a granular feel were shotty and transilluminated poorly. Estrogen therapy was begun in September 1934 with doses of 5 000 and 10 000 international units which were gradually decreased. Between September 1934 and May

area mentioned had disappeared and the patient was well. She was still well when examined in December 1936 and last reported that she was well in March 1937.

The histologic appearance of the tissues removed from the upper and outer quadrants of painful breasts was frequently demonstrated by biopsy performed prior to the last decade. Under the microscope the characteristic picture is a cluster of terminal tubules surrounded by increased amounts of connective tissue without any lobular formation. The tubules surrounded by periductal connective tissue may contain secretion (fig 1).

ADENOSIS

The changes noted in painful breasts may be followed by the development of adenositis. This condition is characterized clinically by the presence of multiple indefinite nodules or small shotty masses in one or both breasts usually distributed about the periphery. The tender and dense areas in the outer upper quadrant found in painful breasts are present in early cases. In such early cases the breasts are usually of fair size with considerable parenchyma. The menstrual cycles continue to be regular.

In fully developed adenositis (figs 2 and 3) the stroma of the breast is increased in density and the

size of the breast is reduced. The breast has a saucer-like or liver-like edge. Pain, flat areas of increased density and indefinite nodules are present, but in addition discrete multiple tumors may be palpated, which histologically may prove to be small papillomas,

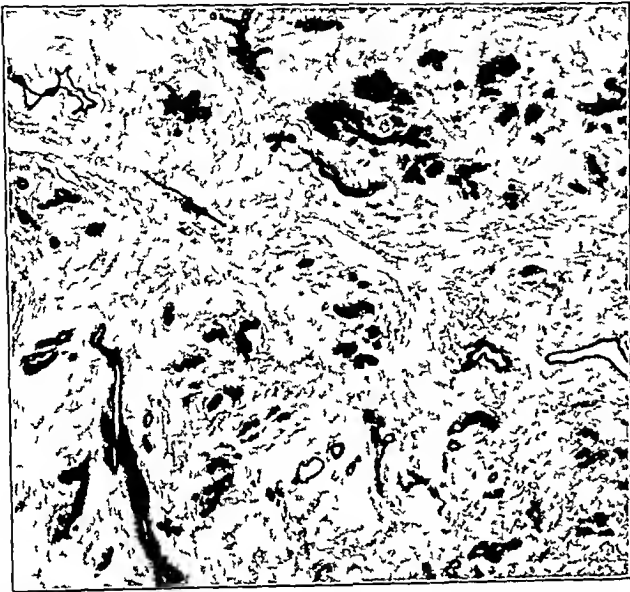


Fig. 1—Section of tissue removed from a dense area in the outer upper quadrant in a case of persistently painful breasts. The terminal tubules are atypical and show no lobular formation. They are widely separated by hyperplastic periductal connective tissue.

minute cysts or nonencapsulated adenomatous areas. A dark, bloody discharge from the nipple was observed in 7 per cent of our cases. The patients with typical adenosis are usually in their late thirties or early forties. Menstruation is apt to be painful or irregular, or the cycle is shortened to twenty-six days or less. Nonparous women predominate. Pregnancy or the

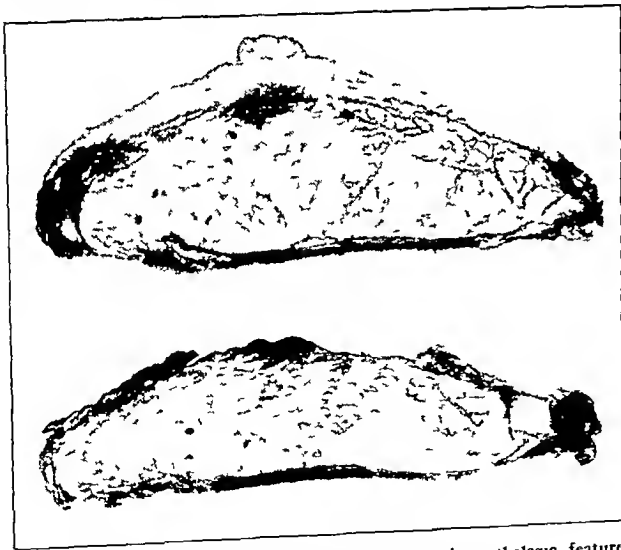


Fig. 2—This illustration and figure 3 portray the pathologic features of adenosis. Here is a gross specimen showing increased density of the fibrous stroma with minute cysts and small papillary masses.

menopause may cause these changes to disappear. In rare instances a benign papilloma or comedocarcinoma develops. Usually, however, the condition is self-limited and terminates with the formation of multiple small cysts. Spontaneous return of the breast to normal before the menopause is rare, occurring in less

than 5 per cent of our series. The patients are usually high strung, nervous and underweight. The thyroid gland is often palpable, and a definite adenoma is sometimes found.

Twelve patients with adenosis in various stages were treated by endocrine therapy. The data on these cases are summarized in table 2. The histories of several typical cases are given here. In general, the treatment of this form of chronic cystic mastitis with estrogen is highly successful. Pain is relieved and most of the nodules and areas of increased density disappear or are reduced in size. A tendency to recurrence from eighteen months to two years after treatment is often noted, but this can usually be controlled with single injections of 10,000 international units given each month in the premenstruum.

CASE 4—E. K., a white woman, aged 27, is married but has no children, although both she and her husband desire them. Her menstrual periods are regular. About four years before admission severe pain was felt in both breasts before her

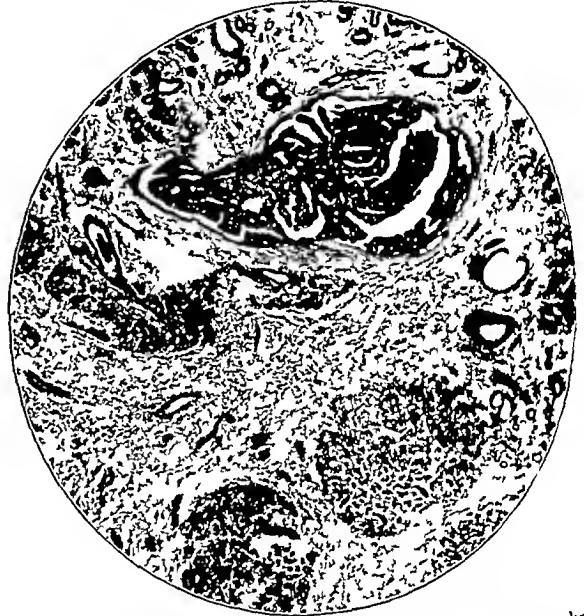


Fig. 3—A section showing a small intracystic papilloma and irregular epithelial proliferation in the terminal tubules in a case of advanced adenosis.

periods. At first this soreness lasted for one week before her periods. It is now nearly continuous. Four months before admission a lump appeared in the right breast. The patient received sixteen injections of anterior pituitary like principle and small doses of estrogen (250 international units) elsewhere. The tumor was slightly smaller after treatment but the pain was not relieved and the patient was advised to have her breast removed.

When seen in January 1936, the right breast was larger than the left but the breasts were otherwise normal on inspection. The left breast had a definite edge on palpation and was diffusely soft or lumpy, particularly in the outer and upper quadrant. The right breast also had a definite edge but had a large flat dense area about 4 cm in diameter in the outer and upper quadrant. The region in which the former lump was felt, the inner lower quadrant, was now normal. The patient received 40,000 international units of estrogen in January 1936. Thereafter she received 10,000 international units once a month for six months. The breasts have remained free from tumors and free from pain since the second month of injection. She was seen in January 1937 and both breasts were normal. Aug. 20, 1937 the patient was three and a half months pregnant. The size of the breast had nearly doubled; they were of uniform density and were free of palpable nodules.

CASE 5—M H, a white woman aged 46 has one child, aged 23 years. The patient had masses excised from each breast in 1929 and 1932. In August 1934 she presented herself with a lump in the lower part of the left breast. She thought that a nodule in the right breast had appeared and spontaneously disappeared. The patient's menstrual periods were regular. She had had an asymmetrical enlargement of the thyroid. Her basal metabolic rate was $17+$. She had been worrying and lost weight.

On examination there were indications of recent loss of weight and there was diffuse enlargement of the right lobe of the thyroid. Both breasts transilluminated somewhat poorly. Both breasts were shotty in the upper and outer quadrant with scars to the outer side of each nipple. There was a dense mass 2 cm in diameter in the lower hemisphere of the breast. Microscopically the excised masses showed epithelial hyperplasia with irregular lobule formation (fig 4). The patient received 30 000 international units of estrogen and 1 440 bird units of pituitary lactogenic substance. Secretion was obtained for four days. The patient remained well for nineteen months, all lumps disappearing. After this time pain and shottiness began to return and she received 40 000 international units of

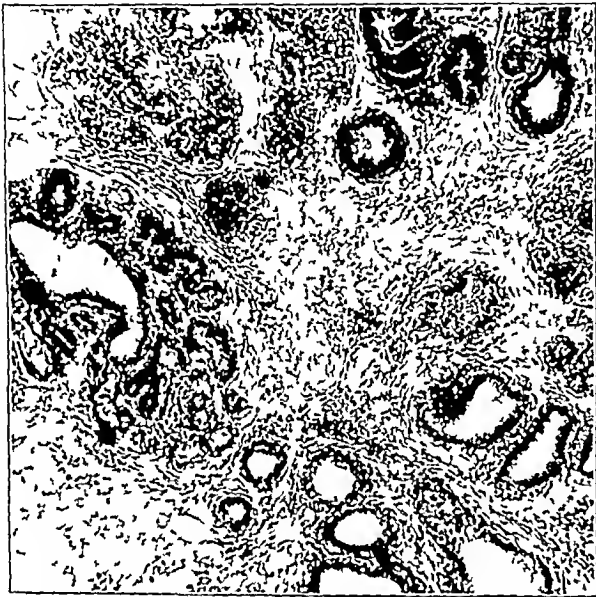


Fig 4—Section in a case of adenosis made from tissue removed before treatment with estrogen. The tissue is rich in epithelial elements.

estrogen in May 1936. In October 1936 there was a tendency for the left breast to be slightly granular but the right breast was entirely normal. The patient has gained from 6 to 8 pounds (27 to 36 Kg). The patient was well January 1937 on one injection of 10 000 international units of estrogen a month. She has continued well without further treatment to date (September 1937).

The mammary changes in adenosis are characterized by epithelial proliferation which results in small intracystic papillomas or nonencapsulated adenomatous areas. Fibrosis or the formation of small cysts may supervene. The essential dysfunction is apparently in the pituitary which results in irregularities in the secretion of the ovarian hormones. The object of the estrogen therapy in these cases is to suppress the pituitary activity and to carry pathologic changes of the breast forward to a state of involution or fibrosis (figs 4 and 5). With estrogen therapy such fibrotic changes may be accompanied by cyst formation, so that for a time a few lumps in the breast replace the more diffuse mammary changes. In such cases prolactin therapy may stimulate involution (figs 6 and 7).

CYSTIC DISEASE

Cystic disease is characterized by the development within the breast of one or more cysts of appreciable size. Several cysts may develop over a period of several years in the same patient but not infrequently

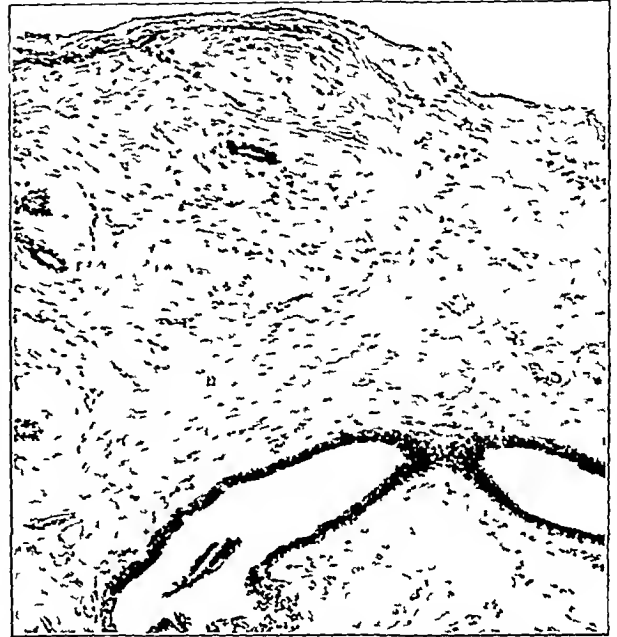


Fig 5—Section made in tissue removed at biopsy from a patient who received 500 000 international unit of amniotin (Squibb) over a period of ten months for the treatment of advanced adenosis. Epithelial proliferation has been replaced by a marked fibrosis and early cyst formation.

when the patient is first examined there is but one cyst. Cystic disease, like adenosis, occurs more frequently in women who have not borne children. It occurs

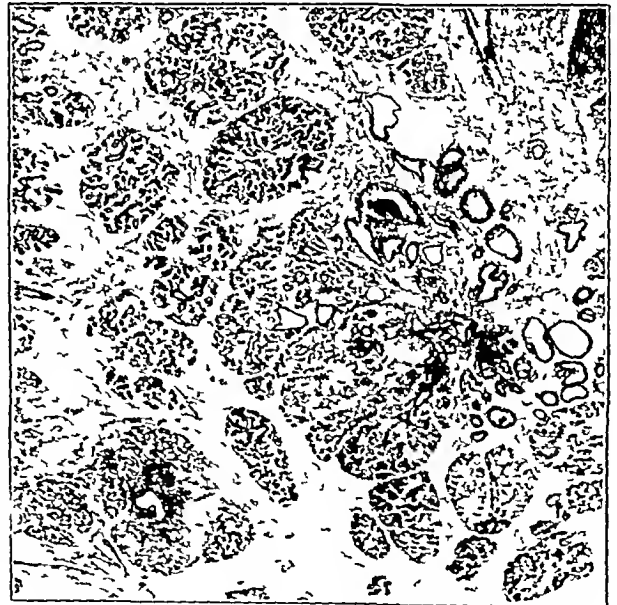


Fig 6—Section of biopsy in a case of adenosis before treatment with pituitary lactogenic substance.

later usually in the forties or near the menopause in women with a regular menstrual cycle who are apparently healthy in other respects. Premenstrual pain or indurated areas in the breast are unusual. Cysts make their appearance quickly. The known duration of the

tumor is given in days or weeks rather than in months or years, as in adenosis. The breasts affected are well developed and contain increased amounts of fatty or fibrous tissue. The cyst is round, smooth and freely movable. It transilluminates clearly, and on aspiration

in May and June 1935. She took some estrogen by mouth that summer. This treatment was repeated in July 1936 at which time she received 20,000 international units of estrogen. Following this the lumps in both breasts entirely disappeared. In January 1937 the left breast was normal on palpation. There was a new cyst about 2 cm in diameter in the outer and upper quadrant of the right breast, however, which has appeared within the last six weeks.

That proper endocrine therapy may prove effective in chronic cystic mastitis is substantiated by clinical observations in which the disease has disappeared during the course of normal pregnancy. Experimentally cysts of the breast do not develop in rats maintained on high doses of estrogen if pseudopregnancy is induced with repeated injections of gonadotropic principle from pregnancy urine, although cysts can be produced in rats given high doses of estrogen alone. The following case illustrates the relationship of chronic cystic mastitis to ovarian dysfunction and the regression of the disease during pregnancy.

CASE 7—A white woman aged 32, had two children, the youngest being 10 years of age. In April 1934 one ovary and two thirds of the opposite ovary were removed because of cysts.

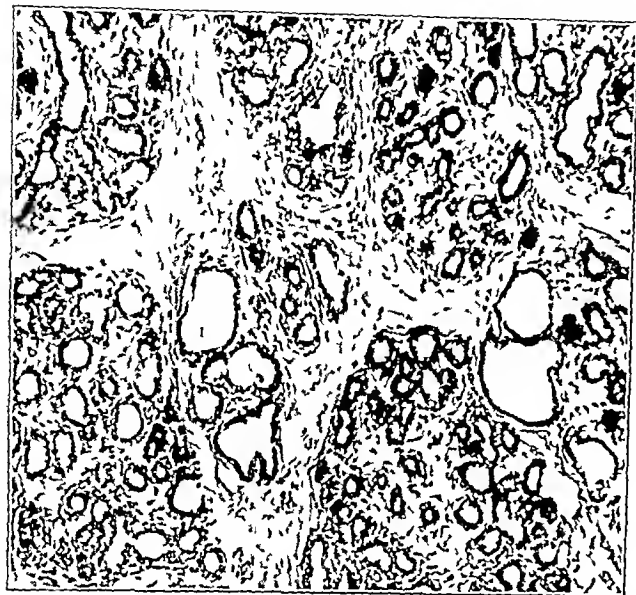


Fig. 7—Second biopsy from case shown in figure 6 one month later following the injection of 2,600 bird units of prolactin (Squibb). The acini show secretory activity and dilatation.

a cloudy milklike fluid is obtained. When one or more cysts have appeared and spontaneously disappeared, a residual area of fibrosis may remain. Rarely, as described by Reclus, multiple cysts of appreciable size may be present at the same time in the two breasts. A form of cyst may develop in a preexisting fibroadenoma during lactation.

Ten cases of cystic disease treated by endocrine therapy are summarized in table 3. In general, lasting results are more difficult to achieve with endocrine therapy in this form of the disease and dosage must be more carefully adjusted to guard against overtreatment. Case 6 is illustrative.

CASE 6—E. S., a white woman, aged 48, married, has one child aged 19 years and has had one miscarriage. Her menstrual periods have always been regular but she is now approaching the menopause. She has had active pulmonary tuberculosis for ten years and trouble with her breasts for four years.

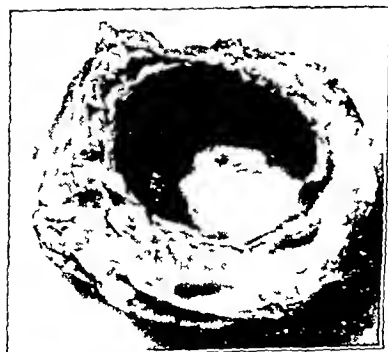


Fig. 8—This illustration and figure 9 portray the pathologic features of cystic disease. Here is a gross specimen of a typical blue dome cyst.

A cyst was removed from each breast, one in August 1931 and another in October 1934. In April 1935 another lump appeared in the left breast. The breasts were well developed with scars in the upper hemisphere of both breasts at the

site of the previous operations. A lump 4 cm in diameter which feels like a cyst is felt in the outer and upper quadrant of the left breast and a like tumor in the upper inner quadrant of the right breast. The patient was given injections of estrogen as follows: She received 80,000 international units of estrogen



Fig. 9—Section showing fibrosis in a wall of a blue dome cyst.

and the patient was told that no further pregnancies were probable. Following the operation, pain more pronounced in the premenstruum developed in both breasts. The patient was first seen in November 1935. At this time nothing abnormal was palpated in either breast, but the pain had become continuous and there was mild galactorrhea. There was fear of cancer. The patient was given reassurance that her condition was not cancerous and told to return in six weeks. In January 1936, when the patient returned pain in both breasts had become constant. The menstrual periods had become irregular and the cycle was shortened to twenty-one or twenty-six days. At this examination indurated masses of breast tissue were palpated in the outer upper quadrants of both breasts. Definite masses were present in both breasts about 1 cm in diameter, one in the midupper hemisphere of the left breast and one in the outer upper quadrant of the left breast. The breasts at the periphery were soft and had a definite edge. No endocrine material was given but the patient was told to return for treatment. She did not come back, however, for over a year.

The patient was next seen April 3, 1937. She was ten months pregnant. The pain in the breasts was now intermittent but sharper and more stabbing since pregnancy. On examination a definite edge could still be felt in the left breast and the nodule persisted in the left breast but not in the right. In the right breast an indefinite dense mass was

palpated in the outer upper quadrant, there were no lumps and no definite edge. No treatment was prescribed. The patient was told to return in three weeks.

The patient was seen April 23, 1937. She was now five months pregnant. Pain had disappeared, the breasts were enlarged and no masses could be felt in either breast. She is breast or may be superimposed on early or advanced adenosis. In such conditions estrogen tends to inhibit the secretory activity and may complete the process of fibrosis. If the estrogen therapy is stopped suddenly or continued over too long a period, or given in doses

TABLE 2—Endocrine Therapy in Adenosis

Patient	Age	Menses	Condition and Duration	Therapy*	Result
H S 1933 married no pregnancies	29	Regular	Pain recurrent lumps shotty bilateral for 4 years	Estrogen 50 000 international units for 2 months 1933 estrogen 50 000 international units for 2 months 1937	Improvement 1933 recurrence well 1937
E W 1933 single	34	Regular	Pain dense area right breast bilateral shotty for 3 years	Estrogen 125 000 international units for 6 months	Markedly improved one residual pea sized nodule Well 1937
E K 1936 married no pregnancies	27	Regular	Pain disappearing tumor in right breast bilateral shotty for 4 years	Estrogen 120 000 international units for 7 months	Well 1937
S S 1933 married 2 children	35	Irregular	Lump right breast recurrent lumps bilateral for 1½ years	Estrogen 50 000 international units for 2 months followed by progesterone one 9 international units	Well 1937
H B 1933 married 1 child	37	Irregular	Dense zones bilateral outer upper quadrant bilateral shotty definite edge for 3 years	Estrogen 40 000 international units for 1 month followed by prolactin 600 bird units for 2 weeks	Well 1936
M M 1933 single	36	Irregular	Pain bilateral lumpy definite edge for 2 years	Estrogen 100 000 international units for 3 months recurrence 1936 treatment resumed	Well 1937
M H 1934 married 1 child	46	Regular	Recurrent lumps both breasts enlarged thyroid	Estrogen 30 000 international units for 1 month followed by 1 440 bird units prolactin for 2 weeks 1934 estrogen 60 000 international units for 2 months 1937	Well 1934 1935 recurrence well 1937
M P 1934 married 1 child	30	Irregular	Multiple excision of tumors pain bilateral shotty definite edge for 6 years	Estrogen 30 000 international units for 1 month followed by 800 bird units prolactin for 2 weeks	Well 1937
L S 1933 married 3 children	47	Regular	Pain multiple bilateral nodules definite edge for 1 year	Estrogen 350 000 international units for 3 months 1935 moderate im provement with prolactin 1 000 bird units in 1936	Well 1 residual nodule 1937
A N 1934 married 1 child	40	Irregular	Pain multiple bilateral shotty definite lump left breast for 5 years	Estrogen 30 000 international units for 1 month followed by 800 bird units prolactin for 2 weeks 1934 estrogen and prolactin as above repeated in 1935 10 000 international units estrogen thereafter monthly	Well 1937 one residual nodule
I W 1933 married 3 children	45	Irregular	Pain bilateral shotty 1 definite lump for 1 year thyroid adenoma removed	Estrogen 50 000 international units for 1 month improved 1934 residual mass excised	Well 1936
I C 1936 married, 5 children	43	Regular	Pain bilateral shotty 1 definite lump	Estrogen 60 international units for 2 months 10 000 units monthly for 3 months	Well Sept 1937

* Injections of estrogen given twice weekly

TABLE 3—Endocrine Therapy in Cystic Disease

Patient	Age	Menses	Condition and Duration	Therapy*	Result
E M 1933 married 1 child	23	Regular	Lump in breast for 3 months	Estrogen 60 000 international units in 1 month	Well 1937
F S 1933 married 1 child	45	Regular	Recurrent cysts for 4 years two previous excisions bilateral	Estrogen 80 000 international units for 2 months followed by oral administration	Well 1936 recur rence 1937
I W 1933 married no pregnancies	33	Regular	Multiple recurrent cysts for 10 years three previous excisions bilateral	Estrogen 350 000 international units in 1 month	Unimproved mul tiple cysts remain
H G B 1936 married	51	Regular	Recurrent cysts for 2 months in opposite breast following amputa tion of other breast for cyst	Estrogen 60 000 international units for 1 month dose then decreased with return of symptoms estrogen 60 000 international units monthly thereafter	Improved Feb 1937
F F 1933 married 1 child	34	Regular	Pain solitary cyst for 3 months	Prolactin 420 bird units	Residual area of fibrosis 1 year later No improvement May 1937
N D December 1936 single	29	Regular	Pain for 6 months	Estrogen 140 000 international units in 3 months	Well 1937
S K 1936 married 1 child	33	Regular	Caloctocele occurring after child birth tumor painful left breast for 3 months	Estrogen 10 000 international units monthly thereafter	Pain relieved tumor smaller May 1937
F M 1936 married 1 child	26	Regular	Pain and tumor of right breast for 2 months	Progesterone 20 international units for 2 months	Pain relieved tumor remained
H P 1937 married no pregnancies	46	Regular	Pain and lump for 1 month two thyroid operations	Aspiration of cyst testosterone 20 mg	Well May 1937
W J 1937 married 3 children	45	Regular	Cysts removed 1937 and 1938 recurrent cyst present 2 months	Estrogen 200 000 international units 4 000 weekly	Unimproved cyst excised 1938

Injections of estrogen given twice weekly

being followed monthly until the end of pregnancy, and the breasts have continued to be free from pain and lumps.

In cystic disease the pathologic changes are characterized by increased amounts of connective tissue, by epithelial involution and hypermaturation and by secretory activity in the surviving living cells of the terminal tubules (fig 8). This secretory stage with cyst formation may occur in the abnormal involuting

of over 20 000 international units weekly, cysts may reappear. For this reason estrogen therapy in solitary cystic disease does not yield the same satisfactory results observed in painful breasts and in cases of adenosis.

In recent cases other endocrine substances—testosterone and progesterone—have been tried but without encouraging results.

COMMENT

The treatment of adenosis or of cystic disease by excision of the nodule-containing tissue is unsatisfactory, since the condition is chronic and nearly always bilateral, and similar tumors tend to appear in the same or in the opposite breast following excision. However, such local excision should always be performed in order to permit microscopic study if the clinician is unable to rule out carcinoma. If the pain-

TABLE 4—Ultimate Results in 1,048 Cases of Chronic Cystic Mastitis

Adenosis	Cases	Cystic Disease	Cases
No operation	327	No operation	54
Early (operation)*	106	Simple cysts (operation)	356
Advanced (operation)	101	Multiple cyst (operation)	73
	533		515
Followed more than 5 years	271	Followed more than 5 years	252
Dead of breast cancer	3	Dead of breast cancer	1

* With few exceptions the operations performed in these cases were simple excisions.

ful nodular tissue is allowed to persist without further treatment after its benign nature is clinically established the patient often continues to be apprehensive of cancer despite reassurance by the physician. As the result of changing physicians, multiple excision and amputation of one or more breasts is the rule in at least one third of such cases. We believe that the performance of single or bilateral mastectomies is not indicated.

A review of the data on file in the Surgical Pathological Laboratory has convinced us of the benign nature of these conditions and the absence of a relationship to cancer. Of the 1,048 cases of adenosis and cystic disease shown in table 4, 523 have been followed for more than five years, and in this series carcinoma of the breast developed in only four patients (less than 1 per cent of the cases followed for more than five years).

In carrying out the endocrine treatment in these cases, it must be borne in mind that in general the various forms of chronic cystic mastitis are self limited and tend ultimately to regress. The hormone therapy is a convenient form of palliative treatment preventing needlessly mutilating operations and, if it is properly used, in our opinion it speeds the regression of the disease. Favorable results with this form of treatment have been reported by Mazei⁴ and by Dahl-Iversen.⁵ The results are most satisfactory in persistent painful breasts and in early adenosis.

Successful endocrine therapy in chronic mastitis requires relatively high doses of estrogen. Ten thousand international units is injected intramuscularly twice weekly for a period of three weeks (between two menstrual periods), a total of approximately 60,000 international units being given. This is followed by similar doses injected once a week for another month, then twice the following month. After this a single injection is given in the premenstruum or capsules are taken by mouth every other day to complete six months of treatment. The oral preparation used is amniotin (Squibb) in capsules containing 2,000 international units of estrogen each. The estrogen is never given during menstruation and treatment is usually continued for a period of six months.

In some cases in this series estrogen plus pituitary lactogenic substance was tried instead of estrogen

alone. Thirty thousand international units of estrogen was given the week before menstruation. Following menstruation pituitary lactogenic substance therapy was begun. This substance should be administered daily or twice daily for a period of one or two weeks until secretion is obtained. The total dose required is in the neighborhood of 1,000 bird units. The material is administered intramuscularly in aqueous solution and usually 1.5 cc (containing 40 bird units per cubic centimeter) is given as a single dose.

Lacassagne induced carcinoma of the breast in mice with injections of estrogen in strains to which the females were normally susceptible. Because of these experiments, estrogen therapy is looked on by some as increasing the possibilities of the development of carcinoma of the breast in patients. Such an interpretation of these experiments seems illogical, since it fails to evaluate the factor of dosage. In Lacassagne's experiments estrogen in excess of one millionth of the body weight of the mouse was administered at a single dose, and the dose was repeated weekly throughout the life of the animal. A corresponding dosage in a patient weighing 50 Kg would necessitate the administration of 50 mg of crystalline estrogen at a single dose and the injections would have to be begun in early childhood and continued throughout life. The estrogen therapy used in chronic cystic mastitis is well below the amounts present in normal pregnancy. The safety factor in this form of therapy is therefore well within all reasonable limits.

THE LENGTH OF THE INGUINAL LIGAMENT

IN THE DIFFERENTIATION BETWEEN DIRECT AND INDIRECT INGUINAL HERNIA

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AND

ALFRED S. WHITE, MD

SAN FRANCISCO

A review of the development of the surgical treatment of hernia shows that the interest in this subject has been focused largely on the technic of operative repair and that only cursory attention has been given to the preoperative diagnosis of the types of inguinal hernia. The explanation for this is apparent in that the surgeon depends ultimately on his actual observations at operation for the determination of the surgical procedure that he will use. In other words, the differentiation between direct and indirect types of hernia has not been of particular preoperative importance. The determination of the presence of a hernia has been sufficient.

During the past few years, while engaged in the study of the injection method in a series of 300 cases,¹ we have felt the need for such a presurgical differential diagnosis and have developed certain diagnostic points which heretofore have not been described or, if described, have not been emphasized in connection with the differential diagnosis of inguinal hernia. These diagnostic features appear to be of great practical value not only to surgeons interested in the injection therapy

4. Mazei, Charles. Personal communication to the author.
5. Dahl-Iversen, E. La maladie kystique et son traitement folliculaire. Lyon chir 32: 513 (Sept-Oct) 1935. 1. 1936

From the Department of Surgery, Mount Zion Hospital, San Francisco.
1. Harris, F. I. and White, A. S. The Injection Treatment of Inguinal Hernia. J. Surg. Gynec. & Obst. 23: 201-211 (Aug) 1937. The Injection Treatment of Hernia. Its Present Day Status. California & Western Medical Journal 15: 391 (Nov) 1936. The Injection Treatment of Hernia. Am. J. Surg. 7: 263 (Aug) 1937.

but also to those interested in recurrences following the surgical treatment

Measurements of the inguinal ligament have been made in 500 patients. All patients were males, over 20 years of age, with normal pelvis. The distance measured was that between the anterior superior iliac spine and the spine of the pubis. A remarkable variation in the length of the ligament was noted. Measurements were obtained that varied between 9 cm and 19 cm. It was apparent that a variation of 10 cm must have

the intraspinal distance did not increase in proportion to the increase in the length of the inguinal ligament. The longer the inguinal ligament, the shorter was the relative distance between the spines. In such cases the pelvis is of greater depth. Conversely, the shorter the ligament, the more shallow the pelvis (table 2).

In indirect hernias, then, the pelvic floor is relatively flat and the intra-abdominal pressure is exerted more evenly over the entire inguinal ligament. In direct hernias the pelvic floor is relatively markedly inclined and the intra-abdominal pressure is exerted more particularly near the midline, as shown in the illustrations. This seems logically to explain the formation of direct inguinal hernia in patients with long inguinal ligaments. With a more even distribution of pressure, as in patients with short ligaments, a congenital weakness at the internal ring is necessary for the formation of an indirect hernia.

While an analysis of the measurements of the length of the inguinal ligament is important as an aid in the differential diagnosis of inguinal hernia and is especially important for the injection treatment, there is still another consideration of major interest. This concerns an analysis of those cases which have recurred after surgical treatment. As will be noted in table 1, there have been fifty-eight cases of inguinal hernia that have recurred following surgical repair. The average length of the inguinal ligament in these cases has been 15.5 cm, considerably higher than the average for the pure indirect type.

The prognostic significance of these observations when the operative repair of an inguinal hernia has been performed is of interest. It was found that practically all the recurrent postoperative indirect hernias examined had inguinal ligaments which approached the so-called maximum length of 15 cm for the pure indirect variety. It may be presumed therefore that an operative repair in the case of an indirect inguinal hernia with a relatively short inguinal ligament has a much greater chance for a permanent cure. Those presenting a long inguinal ligament must be particularly watched for a tendency toward recurrence. It is probable that the recurrences noted in these cases were

some significance in relation to the mechanics of the formation of inguinal hernia. Of the 500 cases in which measurements were taken, 300 patients had inguinal hernias. An analysis of the types of hernia in these cases revealed forty-six cases of direct hernia, 207 cases of indirect hernia and forty-seven cases in which both a direct and an indirect element were present. A comparison of the type of hernia present and the length of the ligament revealed an extremely important point. In cases diagnosed as indirect hernia the measurement of the inguinal ligament was always less than 15 cm. In cases diagnosed as direct hernia the measurement of the inguinal ligament was always greater than 15 cm. Measurements of the forty-seven patients diagnosed as having both a direct and an indirect element to their hernias likewise uniformly showed distances of less than 15 cm. The results of these observations are shown in table 1.

As our experience has increased and as a greater number of cases have been examined, a comparison of the types of hernia with the lengths of the inguinal ligament has shown that a definite relationship exists between them. It appears that in individuals with inguinal ligaments of less than 11 cm there is little tendency for the formation of inguinal hernia. In those individuals whose inguinal ligament measures between 11 and 15 cm the appearance of a hernia is always through the internal ring and is of the true indirect inguinal type. As the inguinal ligament approaches the maximum length of 15 cm for the indirect type there is found a greater tendency toward the occurrence of the mixed type of hernia, that is, the combination of a well developed indirect hernia and a partially developed direct element. Cases of hernia appearing in individuals with ligaments measuring from 15 to 19 cm were always of the pure direct type, that is, through Hesselbach's triangle.

In addition to the measurement of the length of the inguinal ligament measurements were taken of the distance between the two anterior superior iliac spines. It was found that the distance between the spines increased with the length of the ligament. However,

TABLE 2—Analysis of Relationship of the Length of the Inguinal Ligament to the Distance Between the Anterior Superior Iliac Spines

Length of Inguinal Ligament	Average Distance Between the Spines
10 cm	22.5 cm
11 cm	23.5 cm
12 cm	23.5 cm
13 cm	23.5 cm
14 cm	24.0 cm
15 cm	24.0 cm
16 cm	27.0 cm
17 cm	28.0 cm

present as a potential direct hernia at the time of the original operation for the repair of the indirect element. As our observations indicate, a tendency toward the mixed type of hernia is present in patients with this length of inguinal ligament.

This seems to indicate that here, then, is a means of segregating those cases which are most apt to recur after surgical repair. Special care in operative technique, with particular attention being given to the closure of Hesselbach's triangle, and more careful postoperative treatment may then be given to patients in this group. A closer follow up with the purpose of finding early recurrences and instituting the injection method may be considered.

Measurements of the length of the penis were also taken and compared with the measurements of the inguinal ligament. The distance measured was from the dorsal root of the penis to the tip of the glans. Generally speaking, it was noted that the length of the penis varied inversely with the length of the inguinal

between direct and indirect hernias and those hernias which present a combination of the two types cannot be overemphasized, for on this differentiation depends the success or failure of the injection method. Such a differentiation between the various types of hernia must be made before the beginning of therapy when the

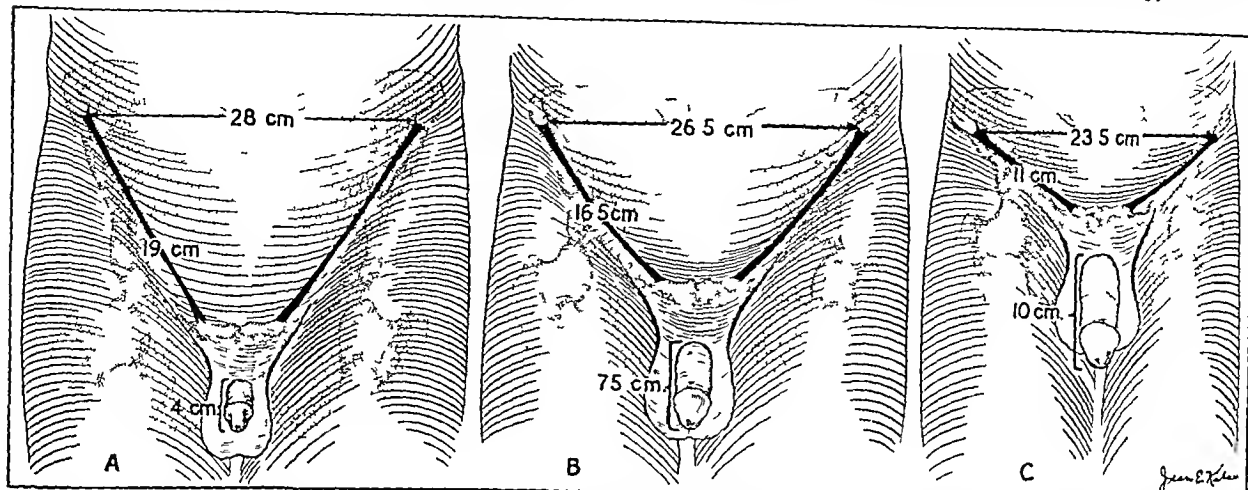


Fig. 1—Schematic drawings from actual patients with the lengths of the inguinal ligaments and the distances between the anterior superior iliac spines accurately drawn to scale. *A* This patient had a direct hernia. Note the 19 cm inguinal ligament and the 28 cm distance between the spines. The penis measured 4 cm. Note the steep inclination of the pelvic floor. *B* This diagram also shows a patient with a direct hernia. Inguinal ligament measures 16.5 cm. Distance between the spines 26.5 cm. Note that with the shortening of the ligament the pelvic floor is relatively less steep. *C* This patient had a potential hernia with markedly dilated rings. Note the short inguinal ligament and the relative shallowness of the pelvic floor. Also note the increase in the length of the penis as the ligament becomes shorter.

ligament. In other words, the longer the ligament, the shorter the penis.

A comparison of these measurements with the type of hernia showed the same correlation as the length of the ligament. In patients with indirect inguinal hernia the measurement of the penis was practically

injection method is to be used. The correct placement of the truss and the proper placement of the injections depend on this exact differential diagnosis. Other diagnostic maneuvers for the differentiation of the direct and indirect types of hernia have been described elsewhere.²

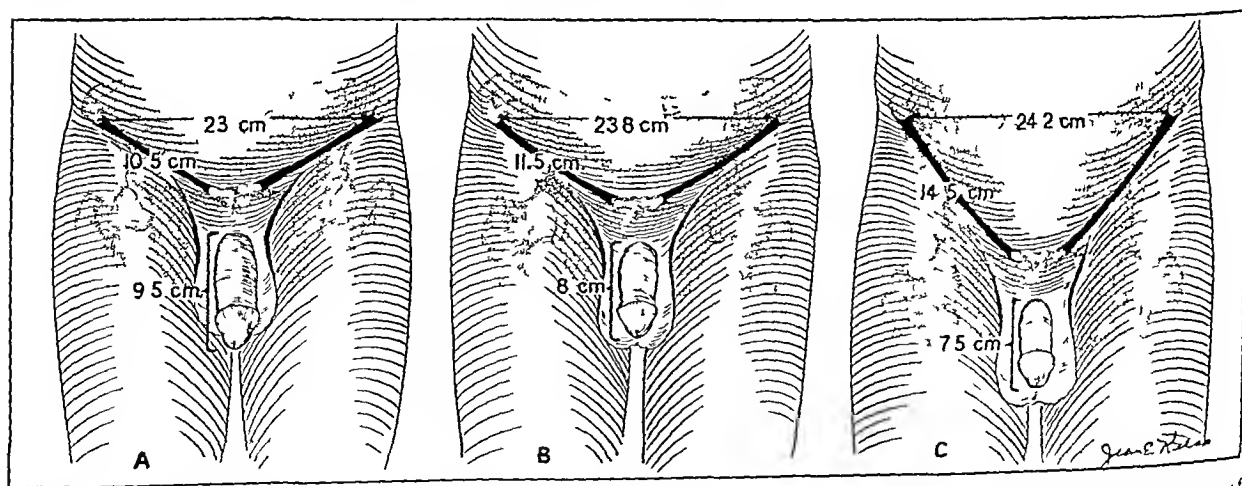


Fig. 2—*A* This patient is normal. There is no evidence of hernia. The inguinal ligament measured 10.5 cm. Note the extreme shallowness of the pelvic floor. *B* This patient has a small indirect inguinal hernia. Note that while the pelvic floor is shallow it is somewhat less so than the normal shown in *A*. *C* This patient had an indirect inguinal hernia. Note that the length of the inguinal ligament is 14.5 cm and that the pelvic floor is much steeper. While to superficial examination patients *B* and *C* are identical as far as the presence and type of hernia is concerned, follow-up study shows that recurrences develop almost entirely in patients such as shown in *C*.

always more than 7 cm, whereas in those patients who had direct inguinal hernia the measurement was always less than 7 cm. While this observation has not been entirely consistent as the measurements of the ligament it is present often enough to be of definite aid in the differential diagnosis.

With the development of the injection method of treatment of inguinal hernia, the exact differentiation between the direct and the indirect varieties has become of urgent importance. The necessity of different

SUMMARY AND CONCLUSIONS

1. There is a definite relationship between the length of the inguinal ligament and the occurrence of either a direct or an indirect inguinal hernia.
2. Individuals with an inguinal ligament of less than 11 cm have slight tendency toward the formation of inguinal hernia.

² Harris F. I. and White A. S. The Truss in Pelvic Hernia. *Ann. Surg.* 64:443 (May) 1937.

3 Hernia occurring in individuals whose inguinal ligament measures from 11 to 15 cm are of the indirect type

4 Hernia occurring in individuals whose inguinal ligament measures from 15 to 19 cm are always of the direct type

5 Recurrences following surgical repair of inguinal hernia are more frequent in patients with long inguinal ligaments

6 The relative shortening of the distance between the anterior superior iliac spine explains the formation of direct hernia in patients with long inguinal ligaments and the formation of indirect hernia in patients with short inguinal ligaments

7 Additional diagnostic maneuvers in the differentiation between the various types of inguinal hernia are of importance to the success of the treatment of hernia by the method of injection

450 Sutter Street—516 Sutter Street

Clinical Notes, Suggestions and New Instruments

ACUTE INFECTIVE LARYNGOTRACHEOBRONCHITIS

ILLUSTRATING THE USE OF EPINEPHRINE (1:1000 SOLUTION)
INTRATRACHEALLY FOLLOWING TRACHEOTOMY

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J. P., a girl, aged 17 months, was admitted to the Riverside Community Hospital, Jan. 5, 1937, because of an acute obstructive respiratory difficulty. The onset three days before was characterized by hoarseness and a high temperature (not recorded), followed by a croupy cough. On the second evening the rectal temperature rose to 104 F., with increasing laryngeal stridor and prostration. On the night of admission to the hospital the child seemed in such distress and so exhausted that intubation was attempted, but the tube was immediately expelled, bringing with it a plug of thick, gummy material. The child then breathed with greater ease for only a few hours, as obstructive symptoms returned with even greater intensity. Without further delay on the second hospital day a low tracheotomy was performed by one of us (E. P. M.), a No. 3 tube being inserted. Thick, gummy material plugged the tube, often necessitating the removal of both inner and outer tubes for cleaning. During the next three days death appeared certain a number of times when these viscid crusts seemed to form below the tube in the trachea and bronchi. This material was so tenacious that it could not be removed by catheter and suction. The child was saved from suffocation repeatedly by the instillation of epinephrine (1:1,000 solution), from 6 to 10 drops, through the tracheotomy tube. The shrinkage of the mucous membrane occasioned by the epinephrine caused these viscid plugs to be released and instantly expelled into the tube, from which they could be removed. On one occasion a plug was aspirated into a bronchus, and acute massive collapse of the left lung occurred. Complete expansion returned however, within four days. By the sixth postoperative day the tracheal secretion had become so thin that severe obstructive symptoms no longer occurred and the use of epinephrine was discontinued. Edema of the larynx persisted for two and one half weeks, necessitating the retention of the tracheotomy tube during that period. Following its removal convalescence was uneventful, and recovery seemed complete by the end of the fourth week.

During the acute illness the temperature ranged from 101 to 106 F. Auxiliary therapeutic measures included a blood transfusion, continuous intravenous drip (three days) and steam inhalations.

Culture from the tracheal secretion revealed *Streptococcus viridans* and *Micrococcus catarrhalis*.

COMMENT

This case is reported because we believe that, since bronchoscopic aspiration was not possible, the use of epinephrine solution by instillation, following tracheotomy, repeatedly relieved the obstruction during the period of great emergency.

3768 Twelfth Street

PERFORATION OF THE GALLBLADDER OCCURRING IN THE LATE STAGE OF PREGNANCY

WADE W. STONE M.D. TOLEDO OHIO

In reviewing a series of gallbladder conditions I had occasion to reconsider a case of ruptured gallbladder complicating an eight months pregnancy. The rarity of this complication justifies a report for the medical literature. Rupture of the gallbladder is not an unusual condition, and every year it is reported with increased frequency. Alexander¹ reported twenty perforations in a series of 1000 cases, George² in 1925 reported 348 cases of perforation of the gallbladder, Heuer³ reported a 25 per cent incidence of perforations in a group of seventy-four cases, Judd and Phillips⁴ found sixty-four perforated gallbladders in a series of 508 cases of acute and subacute cholecystitis, Steinke⁵ reported a 15 per cent incidence of perforations in a group of 200 acutely inflamed gallbladders. The occurrence of a spontaneous rupture of the gallbladder as a complication in the late stages of pregnancy is extremely rare. A careful search of the literature fails to reveal a single case.

The following case is presented first, because of the absence in medical literature of perforation of the gallbladder complicating the late stages of pregnancy and second, because I feel that drainage of the abdomen effected by colpotomy as well as routine drainage of the upper part of the abdomen was the big factor in enabling the patient to survive what appeared to be an overwhelming peritonitis.

REPORT OF CASE

Mrs. M. L., aged 23, was seen in consultation with Dr. Horace K. Beckwith, Oct. 14, 1932, because of extreme distention and severe pain in the abdomen. The patient's family history was not particularly important. She was a primipara and had been married two years. She had had the usual childhood diseases without any complications. The menstrual periods began at 12 years, occurred every twenty-eight days and lasted from two to five days, the flow being considered normal in amount, and the patient suffered only occasional abdominal distress at this time. The last menstrual period occurred Feb. 11, 1932. Quickening was felt at four and a half months. Nausea and vomiting were present during the first three months of pregnancy, with occasional headaches. There was slight edema of the ankles at times. The patient had a very small amount of leukorrhea. She had had symptoms of frequency and burning on urination for some time previous to admittance to the hospital. The onset of her present illness occurred two days previously, with sudden sharp pain in the upper right quadrant, which radiated to the right shoulder blade. This was accompanied by nausea and vomiting of bile-like material. The pain was knife-like in character and had become generalized during the twelve hours previous to her admittance to the hospital. There was also gradual increasing distention of the abdomen, with marked shortness of breath.

When she was examined she was lying in bed, breathing rapidly and with great difficulty. The oral temperature was 99 F. and the respiration rate 50. There was a lemon tint to the skin which was generalized in its distribution, with rather marked flushing of the cheeks. There was marked sordes of the lips and a coated tongue, but the throat was normal. The scalp and cranium were normal. The pupils were round, equal and regular and reacted to light and in accommodation. The nose and ears were normal. The thyroid and cervical glands were not palpable. Respirations were very rapid—chal-

1 Alexander E. C. *Ann Surg* 86:765 (Nov.) 1927

2 George J. *Michigan M. Soc.* 21:595 (Nov.) 1925

3 Heuer G. J. *West Virginia M. J.* 26:237 (May) 1930

4 Judd E. S. and Phillips J. R. *Ann Surg* 98:359 (Sept.) 1933

5 Steinke C. K. *Am J Surg* 27:132 (Jan.) 1935

low and labored, the breath sounds were harsh and the voice was normal with no rales, a percussion note was resonant throughout the entire chest. The breasts were pendulous and the nipples were erect and pigmented. The heart was normal in size with no murmur or thrill and a rate of 120, the blood pressure was 110 systolic, 78 diastolic. There was marked distention of the entire abdomen, with tenderness and muscle spasm, there seemed to be more tenderness in the upper quadrants than in the lower, the fundus of the uterus could be easily outlined two fingerbreadths above the umbilicus. Vaginal examination was not done. The extremities showed very slight edema about the ankles. The white blood cell count was 11,800. Urinalysis revealed a trace of albumin, one plus sugar, two plus acetone and a trace of diacetic acid, microscopic analysis of the centrifugated specimen revealed an occasional pus cell and an occasional red blood cell. Because of the sharp pain in the upper part of the abdomen, with the history of pain radiating to the right shoulder, the low fever, generalized distention with muscle spasm and the icterus of the skin, a diagnosis of acute cholecystitis with perforation complicating an eight months pregnancy was made. The patient was given 50 cc of 50 per cent dextrose intravenously and one hour later received 1,000 cc of saline solution under the skin. The pulse had increased 10 per minute and respiration was more labored than at the first examination. It was decided that it was imperative for the patient to have an abdominal section for peritonitis, and cesarean section to insure a live baby.

Five hours later the patient was taken to the operating room, where, under local anesthesia, a high median incision was made. When the peritoneum was opened an enormous amount of bile-stained fluid was encountered. The uterus was hastily opened through a high classic cesarean section, and an eight months baby was delivered. A hurried exploration of the upper part of the abdomen revealed a gallbladder containing three stones, the facet of one penetrating through the full thickness of the walls of the gallbladder. A small stab-wound drain was made in the right upper quadrant, the stones were removed and a tube was sutured into the gallbladder, a section of the gallbladder being sent to the laboratory for culture. A tube containing iodized gauze was placed in the lower angle of the main incision, which was hastily closed in layers. The patient was then prepared vaginally and posterior colpotomy was done, a tube being inserted and sutured to the cervix. The patient's condition at all times was very poor and she was given 2,000 cc of physiologic solution of sodium chloride intravenously during the operation. The patient was placed on the usual treatment for peritonitis. Her pulse two hours after the completion of the operation was in the neighborhood of 180 at the apex and the respiration rate was 50. A blood transfusion was given to the patient that evening.

The patient's temperature on the following day was 101 F, the pulse 130 and of better volume, while the respiration rate was down to 34. The cholecystostomy tube functioned well from the start. There was considerable drainage vaginally. Hot liquids in small amounts were started on the second day and the liquid diet was gradually increased. The patient passed a large amount of flatus on the morning of the third day and had two aqueous evacuations later that day. From this time on the peritonitis subsided rapidly. The patient's general condition improved steadily. The main incision was grossly infected, the patient having a temperature varying from normal to 100 F for a period of over a week. The cholecystostomy tube remained in place eleven days. The patient's temperature gradually subsided. The wound improved slowly with the aid of frequent irrigations with solution of potassium permanganate. The patient was not allowed out of bed until twenty-four days after the operation and was discharged on the twenty-fifth postoperative day. Urinalysis postoperatively revealed the presence of many pus cells with little or no albumin. Shortly after operation a few granular cast and red blood cells were noted, but these soon disappeared. The patient's convalescence was so uneventful as to make it unnecessary to report it in detail. The culture of the wall of the gallbladder revealed gram-negative bacilli, probably of the colon type group.

The patient was seen in her home by her family physician and was not seen again by me until a period of three weeks had elapsed. At that time there was slight drainage from the gallbladder incision, the main wound, however, was well healed. There was very little vaginal drainage. The baby was reported as doing very well. The patient was seen again on December 12. She had gained considerable weight. Both abdominal wounds showed a marked tendency to keloid formation. On vaginal examination the uterus was found to be small and in good position, no masses were felt on either side. Urinalysis was negative. The baby was reported to be steadily gaining in weight. About four years elapsed before the patient was again seen. She had gained tremendously in weight, having gained 85 pounds (38.6 Kg) since her discharge from the hospital. She stated that she had occasional burning in the epigastrium, particularly if she was not careful of her diet. She had some tendency to so called gas on the stomach and was occasionally nauseated but rarely vomited. The menstrual periods had become somewhat irregular and scanty. It was thought that because of the change in the menstrual cycle, with a tendency toward obesity, the patient was suffering from some glandular dyscrasia, partially at least of ovarian origin. There was a hernia in the lower angle of the cesarean incision. The cholecystostomy wound was well healed without any evidence of hernia. It was suggested to the patient that she be placed on a reduction diet and that the glandular deficiency be remedied. It was thought that at a later date it probably would be necessary to have cholecystectomy and a repair of the ventral hernia.

COMMENT

There might be reason for argument that the fetus should have been delivered vaginally and the peritonitis then treated by surgical drainage. I felt, however, that the chances for saving the patient as well as the baby were considerably greater by proceeding along the lines described here.

CONCLUSION

In a case of ruptured gallbladder complicating the late stages of pregnancy, prompt surgical intervention saved the lives of both the mother and the child.

421 Michigan Street

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORTS
HOWARD A. CARTER, Secretary

NEW CENTURY SUNLAMPS N-1 AND N-2 NOT ACCEPTABLE

Manufacturer: New Century Foods, Inc., Burbank, Calif.

It is one of the functions of the Council on Physical Therapy to report, from time to time, on devices recommended for use in physical therapy. Inquiries have been received recently with regard to the New Century Sunlamps N-1 and N-2. The evidence an interest in the advertising claims made for the lamp particularly concerning their ultraviolet radiation efficiency. Consequently, the Council has given consideration to the advertising copy circulated in connection with the New Century Sunlamps.

An advertising pamphlet, 'Light Your Way To Health' states that the two units are intended 'for either localized or general body treatments'. The N-1 unit according to the pamphlet, is a portable model hand lamp coming in a carrying case. The N-2 unit may be used on a chrome-plated stand.

From information given in the advertising the apparatus appears to utilize the mercury glow type of burner housed in a reflector. The Sunlamps cost less than any other old quartz lamp. It is stated that the average treatment time is four minutes but the distance at which the lamp is placed for this time interval is not mentioned. Both units

are equipped with automatic switches. They are said to consume 30 watts per hour. An ultraviolet lamp with this type of emission should be used only under the direction of a physician in the opinion of the Council.

The advertising matter, apparently written for public consumption ("Light Your Way to Health"), contains unsubstantiated physical claims concerning the effects of ultraviolet radiation which are misleading and inimical to the welfare of the public. For example, these statements are found in the copy "Ultraviolet rays increase body resistance to disease," "Ultraviolet rays soothe the nerve endings, thus relieving pain." Neither of these assertions is supported by critical evidence.

A form letter was also submitted to this office, evidently put out by the New Century Foods, Inc., apparently addressed to the potential purchaser. This contains many therapeutic claims that have not been supported by critical evidence such as the following: "that the tonic use of (ultraviolet) radiation for adults approaches more clearly to the effect of rejuvenation than any other generally practicable system. There is a great increase in vigour, alertness, and resistance to fatigue," "increases red cells and haemoglobin, the anti-infective quality of the blood", "The fagged-out business or professional man, the over-worked or over-playing society woman, the weak undeveloped child with no demonstrable pathology, these begin to flourish with ultraviolet light treatment. They no longer catch colds readily."

Furthermore, the aforementioned form letter includes reference to the influence of ultraviolet rays on specific conditions such as eczema, arthritis and catarrh. This sort of advertising leads to self diagnosis and home treatment. Unfortunately in many instances the underlying pathologic condition continues undiagnosed and untreated thus leading to serious consequences.

With regard to the ultraviolet emission, the form letter states that "the New Century Sunlamp supplies potent ultraviolet rays in much greater abundance than sunshine. It generates exactly the same quality ultraviolet rays as the most expensive medical lamps." So far as is known, the sun is the most abundant radiator of ultraviolet radiation.

In view of the foregoing facts, the Council on Physical Therapy voted the New Century Sunlamps N-1 and N-2 inadmissible for inclusion in its list of accepted devices, basing its decision on the unwarranted and misleading therapeutic claims made in the advertising.

ROSE CW-5 RADIATHERMY UNIT ACCEPTABLE

Manufacturer E J Rose Manufacturing Company Los Angeles

The Rose CW-5 Radiathermy Unit is intended for medical and surgical use. It is equipped with terminal outlets to permit the use of inductance cable, pad electrodes and electro-surgical accessories for cutting and coagulating. The unit is portable but can be used as a cabinet model. The weight is 66 pounds.



Rose CW-5 Radiathermy Unit

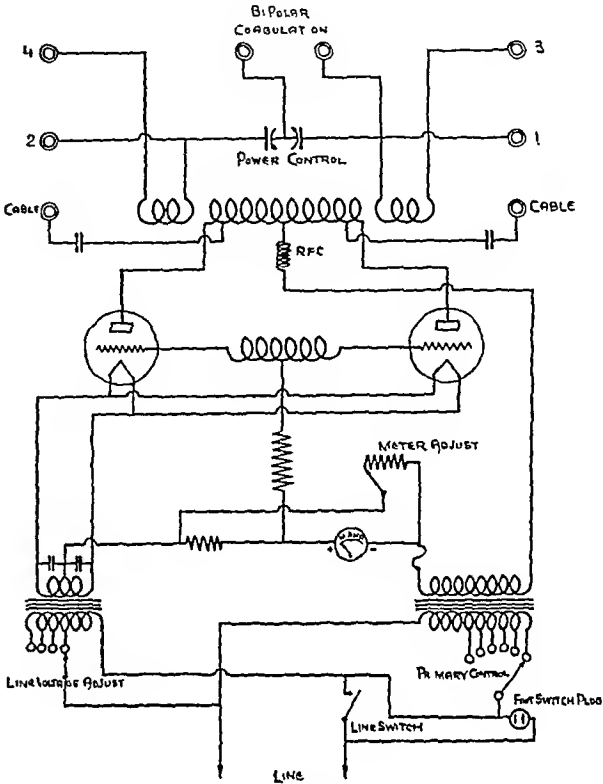
It is wired as a tuned plate, tuned grid, push pull oscillating circuit employing two tubes. The patient circuit is inductively coupled to the oscillator with a variable condenser incorporated in the circuit for tuning purposes. The wavelength is approximately 13 meters.

The input power required to operate it at full load for a period of two hours is 1300 watts. Since no acceptable means has been proposed for measuring the output, no claims are made. However, a phantom load test by means of electric light bulbs connected through condenser pick up plates and arranged to activate a photo-electric cell and calibrated meter approximates 480 watts.

The transformer temperature rise and the rise of the temperature within the cabinet taken at various levels are within the limits of safety prescribed by the Council. Burns may be

produced but can be avoided by the use of proper precaution. They are less likely to occur than with the conventional type of diathermy.

A series of tests were run by a reliable investigator and submitted by the firm as evidence of the effective heating properties of the unit. Eight tests were made with the inductance cable technic and eight cuff electrodes. Eight healthy



Schematic diagram of circuit

male medical students were used as subjects. Four were used for each method of application, each man submitting to two tests, one test on the right thigh and one on the left. Temperature measurements were made by the usual thermocouple method in the anterior portion of the thigh at depths of one-eighth inch, three-fourths inch and 2 inches or on the bone. These depths were measured from the skin straight in, that is,

Averages of Eight Observations, Coil Technic

Deep Muscle		Subcutaneous		Skin		Oral	
Initial	Final	Initial	Final	Initial	Final	Initial	Final
100.3	104.6	99.5	103.3	94.9	102.8	98.4	99.1

Averages of Eight Observations, Cuff Technic

Deep Muscle		Subcutaneous		Skin		Oral	
Initial	Final	Initial	Final	Initial	Final	Initial	Final
100.0	103.7	99.3	104.4	94.9	100.2	97.4	98.9

normal to the skin surface. Each of the measurements given in the tables represents an average for eight observations.

The unit was tried out in a clinic acceptable to the Council and found to give satisfactory service. It was found to perform as successfully as other units of the same general type.

In view of the foregoing favorable report on the unit, the Council on Physical Therapy voted to include the Rose CW-5 machine in its list of accepted devices.

Council on Pharmacy and Chemistry

The Council on Pharmacy and Chemistry of the American Medical Association records with deep sorrow the death of

GEORGE HENRY SIMMONS

George Henry Simmons was born in Moreton, England, Jan 2, 1852. He died in St Luke's Hospital, Chicago, Sept 1, 1937. Dr Simmons's life and death were in harmony with his wishes. He was spared lasting disease and suffering, retaining his mental faculties and his varied interests in human welfare to the end. He spent the years following retirement happily but not in idleness. Indeed, he continued to take a lively interest in those things to which he had devoted the greater part of his life—medicine and the welfare and happiness of mankind.

Dr Simmons's life and its broad activities have been described in *THE JOURNAL*. It remains for the Council to consider more particularly that phase of his work whereby he sought successfully to promote rational scientific therapeutics.

Thirty years ago one often heard the statement that the therapeutic use of drugs was in a state of chaos. This condition arose partly because the rapid strides that had been made in chemistry and biochemistry, pathology and pharmacology outran the capacity of the average physician to distinguish real progress from the absurd and often fraudulent reports of pretended advances which filled so large a part of the medical literature of that day.

Commercial interests did not create the condition, but they strove mightily to profit by it. Simmons and other leaders in medicine early became deeply concerned with the need of introducing system in place of the general confusion. With this end in view, Simmons in consultation with other broad-minded men organized the Council on Pharmacy and Chemistry, with the primary object of protecting the advertising pages of *THE JOURNAL*, which under his direction had become the foremost weekly medical journal of the United States, later of the world.

Simmons was well aware that this course would involve the enmity of powerful financial interests that were thriving on existing conditions. Ten years after the organization of the Council he stated in an address before the Southern Medical Association that the task which the Council had undertaken included the solving of problems so difficult that they seemed impossible of solution, that the work appeared, as it proved to be, stupendous, and that the members of the Council had been ridiculed and even slandered in the beginning. After enumerating many fraudulent, useless or even dangerous preparations which had been driven virtually, or completely, out of existence, he stated that not a single nostrum had been introduced successfully to the physicians of the country after the inauguration of the Council, whereas previously there was hardly a week—certainly not a month—in which at least one was not foisted on the medical profession. That address with its enumeration of changes which had already taken place may well be astonishing even to members of the Council today.

Simmons proceeded with great skill to secure the cooperation of the better class of manufacturers, to many of whom he proved not only that honest advertising was practicable but that it was more profitable. He then broadened the scope of the work of the Council, which undertook the consideration of many therapeutic problems not directly concerned with the original purpose for which the Council was organized and he was able to secure the active participation of many of the foremost teachers of medicine in the United States and of some living abroad. Simmons builded better than he knew or possibly in his modesty he did foresee the constantly expanding nature of his work, and those who have followed his career are agreed that he did more—directly and indirectly—for the progress of medicine than any other man of his time.

It has been said by one long closely associated with Simmons that his founding of the Council on Pharmacy and Chemistry, his active participation in all its work, his support through many trying battles, may appear but a trivial insignificant fraction of so great and extensive a career; nevertheless the Council seemed nearest to his heart.

because his keen intuition saw that it was the way to the solution of problems of fundamental honesty, scientific achievement and practical progress that affect the daily life of every physician. We of the Council shall miss the contagion of his enthusiasm and the warmth of his friendship.

Every member of the Council on Pharmacy and Chemistry joins in this expression of sorrow at the passing of one for whose many fine qualities they have the highest admiration and whom they have long held in deep affection.

We may well say of Simmons, as he wrote of another member of the Council on such an occasion as this: "In his death the Council has lost a member of unique value, *THE MEDICAL PROFESSION* a servant who served it faithfully."

REPORTS OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT
PAUL NICHOLAS LEECH Secretary

SALYSAL, A NONPROPRIETARY NAME

Rare Chemicals, Inc., Nepera Park, N. Y., presented for the Council's consideration the salicylic acid ester of salicylic acid under the name of Salysal. The name Salysal was proposed because Diposal, the name under which the preparation was introduced, is owned and controlled by the Chemical Foundation. The firm also indicated its willingness to consider any suggestion from the Council as to what the preparation should be called if Salysal were not satisfactory. The Council informed the firm that it could not recognize the firm's right to a proprietary name but that it was willing to consider the alternative suggested by the firm, its relinquishment of proprietary rights in the term Salysal. In reply, Rare Chemicals, Inc., formally relinquished its exclusive rights to the name Salysal. The Council, therefore, adopted Salysal as a nonproprietary name for the salicylic ester of salicylic acid.

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS FORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES BY WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

PAUL NICHOLAS LEECH Secretary

SALYSAL.—The salicylic ester of salicylic acid— $\text{HO.C}_6\text{H}_4.\text{COO.C}_6\text{H}_4.\text{COOH}$

Actions and Uses.—Salysal provides the antipyretic and analgesic effects of the salicylates. Being insoluble in water and dilute acids, it is relatively free from disagreeable taste and local irritating action. The toxicity of salysal is relatively low and is no greater than that of acetylsalicylic acid or sodium salicylate on the basis of salicylic acid content.

Dosage.—From 5 to 10 grains (0.3 to 0.6 Gm.) two to three times a day. Salysal is approximately twice as active therapeutically as sodium salicylate and may be employed in one half the dosage of the latter drug.

Manufactured by Rare Chemicals, Inc., Nepera Park, N. Y., U. S. patent No. 922,995 (May 25, 1909, expired). The firm has relinquished trademark rights to the name salysal.

Salysal Tablets 5 grains (0.3 Gm.)

Salysal is a white crystalline odorless and tasteless powder. It melts at 149° C. (Kofler micro melting point apparatus). Salysal is soluble in alcohol (ether) and alkalis; it is insoluble in water and dilute acids.

Shake salysal with cold water and filter. Separate portions of the filtrate do not yield a violet color on addition of ferric chloride test solutions or become cloudy on addition of silver nitrate test solution. Dissolve 0.05 Gm. of salysal in 1 cc. of normal potassium hydroxide solution and add 1 cc. of normal sulfuric acid and dilute with 5 cc. of water. On addition of 1 drop of ferric chloride test solution a deep violet color is produced.

(a) Incinerate a weighed amount of salysal; the residue is not more than 0.03 per cent.

(b) The moisture content is not more than 0.5 per cent. Dissolve 0.5 Gm. of salysal previously dried at 100° C. for two hours and accurately weighed in 50 cc. of diluted alcohol which has been previously neutralized with tenth normal sodium hydroxide. Add 1 cc. of phthalein test solution as indicator. Add to this 50 cc. of tenth normal sodium hydroxide and reflux for one hour. After cooling to room temperature titrate the excess alkali with tenth normal hydrochloric acid. The difference is the number of cubic centimeters of tenth normal hydrochloric acid required to neutralize the salicylic acid ester present in the tenth normal sodium hydroxide. Calculate the amount of salysal in the sample not be less than 99 per cent.

Council on Foods

THE COUNCIL ON FOODS HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT
FRANKLIN C BING Secretary

THE NUTRITIONAL VALUE OF SPINACH

Spinach, kale, turnip tops, beet leaves and other green leafy vegetables have long been considered as particularly desirable components of the diet because of their content of certain vitamins and minerals. Of these foods, spinach (*Spinacia oleracea*) has perhaps been most extensively studied.¹ The cooked leaves of this plant have been used as a food for centuries. At the present time this food is available commercially in a variety of forms. Fresh spinach can be purchased in the metropolitan markets of the United States at all seasons of the year. So called quick frozen spinach is becoming more readily obtainable in metropolitan centers. The canned product, including sieved spinach, can be purchased anywhere and several brands of the latter have been accepted by the Council as foods that are useful in infant feeding. Dried powdered spinach also can be purchased, and it is obtainable in tablet form, one brand has been accepted.

With the development of our knowledge of nutrition, the value of green leafy vegetables received special attention, and spinach, so readily obtainable throughout the year, was emphasized as typical of such foods. While some of the supposed nutritive properties of spinach are now known to be nonexistent, still other properties are well established, and spinach should continue to be regarded as a wholesome food. The present report provides a review of existing information regarding the composition and nutritional significance of spinach.

COMPOSITION

Raw Spinach—In the accompanying table is presented the average composition of fresh spinach according to the older analyses reported by Atwater and Bryant² plus some more recent data. These figures show that spinach is relatively rich in ash and in fiber compared to total solids. They also show that this food would be included in lists of vegetables lowest in carbohydrates as used in the planning of diets for diabetic patients.

The average vitamin content of fresh spinach has been calculated by Daniel and Munsell³ to be per hundred grams, 35,000 U. S. P. units of vitamin A, 30 International units of vitamin B₁, 800 International units of vitamin C and 125 Sherman Bourquin units of vitamin G. Raw spinach, therefore, contains an extraordinarily high concentration of vitamin A (provitamin A) and is rich in vitamin C.

Analyses show also that spinach is a vegetable food which is particularly high in iron and calcium. It also contains a fair amount of copper. The total iron content has been reported to be from 17 to about 3 mg. of iron per hundred grams of fresh leaves.⁴ The calcium content has been estimated by Sherman⁵ to be on an average about 0.067 per cent, values as high as 0.13 per cent have been reported. The copper content of spinach is variable but may be expected to be in the neighborhood of 0.12 mg. per hundred grams.⁶ According to these figures obtained from chemical analysis, spinach would be rated as a good source of calcium and an excellent source of iron and, although the human requirements for copper are not known with any degree of precision it is a relatively good source of copper. Further on in this report evidence will be

discussed which indicates that spinach is not as good a source of dietary iron and calcium as these quantitative values would indicate.

Other substances have been reported to occur in spinach. Perhaps the most important of these from the dietary point of view is oxalic acid. Values of from 0.29 to 0.82 per cent have been found for the fresh leaves.⁷ These figures show that spinach is a food which is relatively high in this substance. The oxalic acid is present in the form of its salts—calcium oxalate and other oxalates, and possibly as free oxalic acid. Traces of citrates and malates also have been reported.⁸

The carotene of spinach has been studied by a number of investigators.⁹ It appears from their work that practically all the carotene (provitamin A) is in the form of optically inactive beta carotene. The nature of the proteins¹⁰ and of the ether extract¹¹ of spinach has also been investigated. The presence of two new sterols in the nonsaponifiable fraction has been reported. While these and other investigations on the components of spinach are of great interest for the purposes of the present article they need not be discussed further.

Variations in Composition—As in the case of most plant materials the quantitative composition of spinach is variable.

Average Composition of Raw Spinach

	per cent
Moisture	92.3
Protein (N x 6.25)	2.1
Fat (ether extract)	0.3
Total carbohydrate	3.2
Crude fiber	0.9
Ash	2.1
Calcium as Ca	0.067
Iron as Fe	0.0025
Vitamin A	35,000 International units per hundred grams*
Vitamin B ₁	30 International units per hundred grams
Vitamin C	800 International units per hundred grams
Vitamin G	125 Sherman units per hundred grams

* Mary S. Rose (A Laboratory Handbook for Dietetics, ed. 4, New York: Macmillan Company, 1937) used the median value from the best reported data and has estimated the vitamin A content of spinach to be somewhat lower or 25,000 International units per hundred grams.

References to the following studies will show the scope at least of some of the work which has been reported on this subject. The vitamin C content of different varieties of spinach,¹² the effect of different soils and the influence of fertilizers on the amount of vitamin C in spinach,¹³ the effect of weather conditions on the composition of spinach grown in India,¹⁴ and variations in the mineral content of spinach grown in the Orient¹⁵ and in Maryland and Virginia¹⁶. It has been sug-

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14 Ranganathan, S. The Vitamin C Content of Some Indian Foodstuffs. *Indian J. Med. Res.* 23: 239 (July), 1935.

15 Wang, Cheng Fa. The Distribution of Calcium, Phosphorus and Iron in Leafy Vegetable. *Chine. J. Hyg.* 10: 631 (Dec. 15), 1936.

16 David, on Jehiel and McClellan, J. A. The Variation in the Mineral Content of Vegetable. *J. Nutrition* 11: 22 (Jan.), 1936.

1 New Zealand Spinach, *Tetragonia expana*, which has come into the American market within recent years, is not related botanically to true spinach.

2 Atwater, W. O. and Bryant, A. P. The Chemical Composition of American Food Materials. Bull. 28, rev. ed. United States Department of Agriculture, Office of Experiment Station, 1906.

3 Daniel, Esther Peteron and Munsell, Hazel E. Vitamin Content of Food. Misc. Pub. 2:5, United States Department of Agriculture, Bureau of Home Economics, June, 1937.

4 Stiebeling, H. H. K. The Iron Content of Vegetables and Fruits. Circular 205, United States Department of Agriculture, Bureau of Home Economics, February, 1932.

5 Sherman, H. C. Chemistry of Food and Nutrition, ed. 5, New York: Macmillan Company, 1937.

6 Lindlow, C. W., Elvehjem, C. A. and Peteron, W. H. The Copper Content of Plant and Animal Food. *J. Biol. Chem.* 82: 465 (May), 1929.

gested that the composition of vegetables might well be thought of as a range of values rather than as any fixed value.

More important than variations in the composition of the fresh leaves of spinach is the effect of various treatments concerned with the preparation of the dish that is eaten. Some information is available on the vitamin C content. It has been shown by a number of workers that the amount of vitamin C in the leaves of fresh spinach diminishes rapidly when standing at ordinary temperatures and becomes vanishingly small five or six days after the leaves have been cut.¹⁷ Storage at refrigeration temperatures and storage in the absence of oxygen retard the rate of loss.

The effect of cooking on the nutritive value of vegetables has been studied by a number of workers and it is well known that the effects vary somewhat depending on the method of cooking. Comparatively few quantitative data are available regarding the vitamin content of cooked spinach. Considerable work is being done on these problems, particularly in university departments of home economics and in government bureaus, and because of their practical importance such investigations should be encouraged. As far as available information goes it appears that the cooking of spinach may leach out considerable amounts of salts and water soluble vitamins and may result in the destruction of considerable amounts of vitamins B₁ and C.¹⁷ There also may result some destruction of vitamin A and vitamin G.

Cooked spinach usually is considered as an excellent source of vitamin A, a fairly good source of vitamin C, and a contributor of iron and bulk to the diet.¹⁸ Canned spinach has been considered to have about the same nutritional values as fresh cooked spinach. On the other hand, the drying of spinach ordinarily results in the practically complete destruction of vitamin C, although the vitamin A can be retained to a much better degree and dried spinach rates as an excellent source of this vitamin. A recent report by Fellers and his associates¹⁹ at the Massachusetts Agricultural Experiment Station provides information about the effect of several processes on the amounts of vitamin A and vitamin C. Colorimetric determinations of the provitamin A content gave the following values, expressed as micrograms of carotene per gram of dried weight: fresh leaves 430, blanched and frozen 358, canned spinach 283, and dehydrated 310. Expressed in International units of vitamin A per gram of dried material, these values are: fresh spinach 7,250, blanched and frozen 3,880, the canned product 6,000 and the dehydrated 520. Thus, spinach in all these forms would rate as an excellent source of vitamin A.

According to this report by the Massachusetts investigators, titration with 2,6-dichlorophenolindophenol of the vitamin C content of spinach gave results in close agreement with the bio-assay method. The fresh leaves contained from 0.38 to 0.77 mg of vitamin C per gram. Of the original vitamin C content, spinach lost the following amounts, expressed in percentages of the original value: on cooking, 48, on blanching and freezing, 40, after canning, 60, on dehydrating, 100. These figures show that canned or cooked spinach is a fairly good source of vitamin C (whereas the fresh leaves are an excellent source) and dehydrated spinach contains none of the anti-scorbutic factor.

NUTRITION STUDIES

Vitamins—While knowledge of the chemical composition of a food is important, conclusive evidence regarding the nutritional value of any food can be obtained only by feeding experiments. The vitamin content of spinach has been determined by animal assays, and therefore the reported values indicate the actual availability of this food as a source of each vitamin so determined.

Iron—Chemical examination for the total iron content of spinach indicates that it is one of the richest plant sources.

thus dietary essential. The evidence now is clear, however, that not all the iron of spinach is available to the organism. Tests for inorganic iron by the dipyriddy method have shown that only 20 per cent of the total iron is ionizable or "available" iron.²⁰ Later workers have found somewhat different values. Shackleton and McCance²¹ reported that 60 per cent of the total iron of spinach is ionizable. Horwitt, Cowgill and Mendel,²² using a method involving treatment with enzymes in imitation of conditions in the intestinal tract, found that 40 per cent of the iron of spinach could be brought into solution and, according to their criterion, could be considered as available. It would be of interest to know the nature of the unavailable iron which these reports would indicate is present in such large concentrations in spinach.

Elvehjem and his co-workers²³ have also checked the chemical determinations of inorganic iron against the biologic assay for available iron. They found that anemic rats responded (by increases in hemoglobin concentration of the blood) to the feeding of spinach to a degree which might be expected if about four fifths of the total iron was unavailable. Earlier reports by Mitchell and Schmidt²⁴ and by Levine, Culp and Anderson²⁵ indicated that the iron of dried spinach is well utilized. However, their experimental animals received 0.4 mg of iron daily, which was sufficiently above the level of intake required by the anemic rat to obscure large differences in availability of spinach iron as compared to inorganic iron salts. Rose, Vahlteich and MacLeod,^{26a} feeding cooked spinach or powdered dried spinach to yield 0.1 milligram of iron daily, found that hemoglobin regeneration in rats was about the same as with an equivalent amount of iron in the form of liver, approximately 50 per cent.

Metabolism studies with infants likewise have shown that spinach is not as good a source of iron as chemical analysis would indicate. The most complete report has been provided by Stearns and Stinger.²⁶ These workers fed infants a basal diet of cows' milk, carbohydrate and orange juice. They then determined the effect on the iron metabolism of small additions to the diet of spinach, egg yolk, a cereal preparation containing added iron salt and an iron salt itself. On the basal diet the infants lost an average of 0.05 mg of iron daily regardless of age (the fourteen infants studied varied from 7 to 54 weeks of age). The feeding of spinach and the feeding of egg yolk did not increase the retention of iron, probably because the iron intakes were too small. The amount of iron retained by the body was definitely increased, however, when the infants were given the cereal mixture containing added iron salt or when they were given ferric ammonium citrate. The amount of spinach fed, it is true, was not great enough to increase the iron intake materially, but the average iron loss of the infants studied was greater when feedings of spinach were administered than when the milk formula alone was given. In the experiments of Schlutz, Morse and Oldham,²⁷ the iron intakes of the infants were increased from 60 to 170 per cent above the level of the basal diet, but these investigators observed no significant increase in the retention of iron.

It may be concluded from these observations that, as far as its practical usefulness as a source of iron in the feeding of infants is concerned, spinach is of negligible value because little

20 Elvehjem, C. A., Hart, E. B., and Sherman, W. C. The Availability of Iron from Different Sources for Hemoglobin Formation. *J. Biol. Chem.* **102**, 61 (Nov.) 1933.

21 Shackleton, Leslie and McCance, R. A. The Ionizable Iron in Foods. *Biochem. J.* **30**, 582 (April) 1936.

22 Horwitt, M. K., Cowgill, G. R., and Mendel, I. B. The Availability of the Proteins and Inorganic Salts of the Green Leaf. *J. Nutrition* **12**, 237 (Sept.) 1936.

23 Sherman, W. C., Elvehjem, C. A., and Hart, E. B. Further Studies on the Availability of Iron in Biological Materials. *J. Biol. Chem.* **107**, 383 (Nov.) 1934.

24 Mitchell, Helen S., and Schmidt, Lola. The Relation of Iron to Various Sources to Nutritional Anemia. *J. Biol. Chem.* **70**, 71 (Oct.) 1926.

25 Levine, Harold, Culp, F. B., and Anderson, C. B. The Availability of Some Vegetables in Nutritional Anemia. *J. Nutrition* **5**, 292 (May) 1932.

26a Rose, Mary S., Vahlteich, Ella McC., and MacLeod, Grace. Factors in Food Influencing Hemoglobin Regeneration. III. Comparison with Whole Wheat Prepared Bran, Oatmeal, Leafy Vegetables, Beef Muscle. *J. Biol. Chem.* **104**, 217-230 (Feb.) 1934.

26b Stearns, Genevieve, and Stinger, Dorothy. Iron Retention in Infants. *J. Nutrition* **12**, 127 (Feb.) 1937.

27 Schlutz, F. W., Morse, Minerva, and Oldham, Helen. Iron Intake and Feeding upon Iron Metabolism of Infant. *J. Pediatrics* **3**, 15 (July) 1933.

17 Fellers, C. R. Vitamin Content of Important Food in the Diet. *Am. J. Pub. Health* **25**, 1340 (Dec.) 1935. Hanning, F. S. 449 (Oct.) 1934. Hanning, Flora. Further Studies of the Vitamin A and B in Canned Strained Vegetables. *J. Am. Diet. Assn.* **2**, 1 (Sept.) 1936.

18 Rose, Mary S. The Foundation of Nutrition. Rev. 1. York: Macmillan Company, 1933.

19 Fellers, C. R., DeFelice, D., and Dunker, C. F. Vitamin C in Fresh, Frozen and Canned Spinach. Report before the Biological Chemistry Meeting of American Chemical Society, 1936.

of it can be fed. However, even though all the iron of spinach may not be available, the total iron content is great enough for spinach to rate as a good source of iron for older children and adults. But direct experimental evidence is not now available to enable one to arrive at any conclusion regarding the precise value of spinach as a source of iron for persons beyond the age of infancy.

Calcium—Though spinach is one of the few plant foods rich in calcium, evidence has accumulated that this calcium is not available to the organism. Many years ago McClugage and Mendel²⁸ found that the calcium of spinach was poorly utilized by dogs. In 1922 Sherman and Hawley²⁹ observed that the calcium balances of children from 3 to 13 years of age were more variable and less favorable when half the milk of the diet was replaced by a mixture of vegetables so selected as to equal the calcium content of the milk omitted. The vegetable mixture fed consisted of spinach and carrots with or without celery or string beans.

On the other hand, Blatherwick and Long³⁰ concluded that the calcium of spinach and also of some other vegetables could be satisfactorily utilized by young women. McLaughlin³¹ in 1927 reported results of some experiments in which for six days she fed spinach as the only food high in calcium to young women. The calcium balance was distinctly positive in six of the subjects and calcium equilibrium was maintained in the seventh. The spinach furnished 70 per cent of the dietary calcium, but, as Sherman has pointed out, the calcium intake was above the maintenance level. It is difficult to interpret the results of any metabolism studies with calcium, particularly if the calcium intake on the basal diet is sufficiently high to result in a positive balance. The evidence does show, however, that the inclusion of spinach in a good diet does not adversely affect the calcium balance of adults.

In 1930 Bloom³² reported her experiments with animals. She fed rats diets that were similar in their concentration of calcium and phosphorus but contained variable amounts of dried raw spinach or dried cooked spinach. Low retentions of calcium and phosphorus were observed on the spinach diets. When the ash of the spinach was fed, rather than the dried leaves, the retentions were higher, even when filter paper was added. The poor availability of the calcium of spinach, therefore, could not be attributed entirely to the roughage of the diet, as Mendel and McClugage had supposed from their results with dogs.

One reason for the poorer availability of the calcium of spinach has been made clearer by the observations of Kohman³³. He reported that as was then already known, ordinary spinach contains about 0.5 per cent of oxalic acid, which is a relatively high amount, although not as high as the oxalate content of a few other foods. Plant histologists have long recognized that much of the calcium of leaves is present in the form of the highly insoluble calcium oxalate. Large characteristic crystals of this substance may be seen on sectioning the leaves of spinach. In feeding experiments with rats, Kohman and Sanborn³⁴ found that the availability of calcium in calcium oxalate is low. Furthermore the presence of soluble oxalates is detrimental because calcium which is otherwise available is rendered unavailable by the presence of these salts. Fineke and Sherman³⁵ in 1935 reported the results of feeding experiments with rats. They found that the calcium of dried spinach was utilized poorly if at all. In contrast, the calcium of kale, a plant which is relatively poor in oxalates, was nearly as well utilized as the calcium of milk. The report by Horwitt, Cowgill and Mendel³⁶ is also of interest in this connection. By means of

an enzymatic digestion method they were able to show that only 30 per cent of the calcium of dried spinach could be brought into solution and hence could be considered available.

That the calcium of spinach is poorly utilized by young infants was reported in 1931 by Edelstein, Langer and Langstein³⁶. Further observations were reported by Edelstein³⁷ in the following year. Schlutz and his co-workers³⁸ likewise concluded that the influence of vegetable feeding on the mineral retention of young infants is negligible and that the addition of spinach actually leads to a slightly decreased retention of calcium. Stearns and Stinger³⁹ found that the calcium retention of infants fed a diet of cow's milk amounted to 35 per cent of the calcium intake but that this fell to 27 per cent of the intake during the time when spinach was fed. They observed that the feeding of spinach to infants appears to be more detrimental than beneficial (as far as calcium and iron are concerned). It may be concluded that there is no evidence that the calcium of spinach is available to young infants and that, indeed, the feeding of spinach may decrease slightly the retention of this element.

More recently Maey and her collaborators³⁹ have reported the results of an extended study of the metabolic balance of calcium on ten growing children. The data obtained by these authors are especially noteworthy because of the care with which the work was done and the relatively long periods in which the children were observed. No untoward effects were observed as a result of adding spinach, or oxalic acid in amounts equal to that contained in the spinach, to the control diet. They found that the rate of storage of calcium, as well as of nitrogen and phosphorus, was not significantly altered by the daily consumption of as much as 100 Gm of spinach. Slight variations in retentions were noted but, as the authors pointed out, these were not incompatible with the usual variations that may be observed during growth. The rate of growth, or storage as one might call it, of calcium in the bodies of these young children was not altered, apparently because the diet was high enough in calcium to overcome any deleterious effect of the oxalic acid of the spinach and still provide for the fluctuating growth needs. As the Detroit investigators have already emphasized, one should not consider spinach apart from the composition of the rest of the diet. Because of its richness in vitamin A, iron and other nutritive essentials, spinach may well retain its customary place along with other leafy vegetables in the diet of children and adults.

SUMMARY AND CONCLUSIONS

From the evidence available, spinach may be regarded as a rich source of vitamin A and as a contributor of vitamin C, iron and roughage to the diet. It is therefore a valuable food.

While the total iron content of spinach is high as compared with other vegetable foods, the evidence shows that this iron is not wholly available and is not well utilized by infants. Evidence regarding the amount of the iron of spinach that is available to older children and adults has not been reported at the present time.

The calcium of spinach is not well utilized by the organism because it is present largely in the form of calcium oxalate, which is insoluble in the fluids of the alimentary tract. Soluble oxalates which are likewise present may interfere with the absorption of the calcium of other foods because of the precipitation of calcium oxalate in the intestine. Metabolism experiments show that the feeding of spinach is of no value during early infancy as a source of calcium; there is, of course, plenty of calcium in milk to meet the needs of normal infants. The evidence also shows that in young children and in adults receiving diets adequate in calcium content the inclusion of spinach does not adversely affect the calcium metabolism.

²⁸ McClugage H. B. and Mendel L. B. Experiments on the Utilization of Nitrogen, Calcium and Magnesium in Diets Containing Carrots and Spinach. *J. Biol. Chem.* **35**: 353 (Aug.) 1918.

²⁹ Sherman H. C. and Hawley E. Calcium and Phosphorus Metabolism in Childhood. *J. Biol. Chem.* **53**: 375 (Aug.) 1922.

³⁰ Blatherwick A. R. and Long M. L. The Utilization of Calcium and Phosphorus of Vegetables by Man. *J. Biol. Chem.* **52**: 125 (May) 1922.

³¹ McLaughlin Laura. Utilization of the Calcium of Spinach. *J. Biol. Chem.* **71**: 452 (Sept.) 1927.

³² Bloom Margaret A. The Effect of Crude Fiber on Calcium and Phosphorus Retention. *J. Biol. Chem.* **89**: 221 (Nov.) 1930.

³³ Kohman E. F. Organic Acids and the Acid-Base Relationship. Oxalic Acid in Foods. *J. Am. Diet. A.* **10**: 100 (July) 1934.

³⁴ Kohman E. F. and Sanborn A. H. Calcium Availability in Foods Containing Oxalates. A Preliminary Report. *Indust. & Engin. Chem.* **27**: 32 (June) 1935.

³⁵ Fineke M. L. and Sherman H. C. The Availability of Calcium from Some Typical Food. *J. Biol. Chem.* **110**: 421 (July) 1935.

³⁶ Edelstein E., Langer H. and Langstein L. Diet Gemüselost in der Kinderernährung. *Deutsche med. Wchnschr.* **57**: 839 (May 15) 1931.

³⁷ Edelstein E. Der Einfluss von Gemüsezulagen auf den Stielstoff und Mineralstoffwechsel des Kindes. *Ztschr. f. Kinderh.* **52**: 483 (March 14) 1932.

³⁸ Schlutz F. W., Morse Minerva and Oldham Helen. Vegetable Feeding in the Young Infant. Influence on Gastro-Intestinal Motility and Mineral Retention. *Am. J. Dis. Child.* **16**: 757 (Oct.) 1933. Schlutz Morse and Oldham.

³⁹ Bonner, Priscilla, Hummel, Frances C., Bates, Mary T., Horton, J., Hunscher, Helen A. and Maey, Isie G. The Influence of a Daily Serving of Spinach or Its Equivalent in Oxalic Acid upon the Mineral Utilization of Children. Report before Division of Biological Chemistry. *Am. Chem. Soc. Pittsburgh* 1936.

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SATURDAY, DECEMBER 4, 1937

PNEUMONIA MORTALITY AND PNEUMOCOCCUS TYPING FACILITIES

In a recent study by Kenneth McGill¹ of pneumonia mortality, he found about 96,500 deaths a year from pneumonia during the period from 1930 to 1935. This represents an average annual rate of 77 per hundred thousand and places pneumonia fifth as a cause of death. If it should be combined with influenza, however, the average annual rate would be 100, thus placing this group near cancer, close to second place.

On the basis of experience in the last six years, chance of a given death being due to pneumonia is approximately one in fourteen. Pneumonia mortality is highest among the young and the very old, higher among males than among females, and higher among Negroes than among white persons. Excessive pneumonia mortality rates occur in certain industries. The 1935-1936 health surveys of eight cities, based on a house to house campaign, indicated that sickness from pneumonia varies inversely with the family income.

Most of the cities with high annual pneumonia death rates per hundred thousand for the years 1929-1931 are located in the southwestern or northwestern parts of the country. Among the cities of 100,000 and over, Pittsburgh has by far the highest rate, 217, and Long Beach, Calif., the lowest, 42. If the cities are listed according to their rates, Kansas City, Kan., whose rate is 100, stands at the midpoint between Pittsburgh and Long Beach.

At least 85 per cent, or 500,000, of the pneumonia cases estimated as occurring each year are caused by pneumococci. Types I, II, III, V, VII and VIII are the most common types and probably account for about 70 per cent of the cases and 85 per cent of the deaths that are due to pneumococci. All but type VIII appear to have high fatality rates. Antipneumococcus serum is available for types I and II, which are estimated

to cause 175,000 cases and 38,000 deaths annually. Serums, promising but not generally employed, have also been developed for types V, VII and VIII, which annually cause an estimated 100,000 cases and 21,000 deaths.

In view of this distribution of pneumonia and the known effectiveness of serum when given early in the most fatal types, the facilities for typing are of the utmost importance. The health departments of thirty-one cities have main or branch laboratories equipped for the typing of pneumococci. Only twenty-seven, however, have employees engaged either full or part time in typing. Furthermore, the laboratories of only twenty-one cities did any typing during 1936. These twenty-one laboratories, however, typed almost 9,800 specimens, secured 6,200 positive reactions and identified the type I pneumococcus 1,200 and the type II pneumococcus 340 times. All but approximately 11,000 specimens were typed by three states, New York, Michigan and Massachusetts, all of which have pneumonia control programs. The Southwest and South east, which in common with the Northeast have high death rates, have much less equipment and practically no activities in typing. Most of the health departments of the ninety-three cities of 100,000 and over operate their own laboratories, but ten depend on contract arrangements. Under these conditions, sixty-one cities possess equipment for typing by the Neufeld rapid method and thirty also have equipment for other methods. Only fifty-one, however, have employees engaged in typing, and only thirty-nine of these actually did any typing during 1936. The thirty-nine city laboratories that were active in 1936 typed 9,227 specimens. Furthermore, seventeen of these cities were participating in the control programs of Connecticut, Massachusetts, Michigan or New York and were responsible for 78 per cent of all specimens typed during that year.

In a questionnaire postcard sent out by the American Medical Association to survey "hospital" laboratory facilities for pneumococcus typing, 2,595 replies were received from 4,565 hospitals. Of 2,595 hospitals, 1,850 were equipped for pneumococcus typing, of which number 1,767 used the Neufeld method. Relatively little regional difference in the percentage of equipped hospitals, however, was evident from this survey. In most of the states, from 30 to 70 per cent of the hospitals recorded facilities.

The high death rate from pneumonia and the large percentage falling in the group of known response to specific serum make it evident that this means of therapy is not adequately employed. Equipment for typing does not necessarily mean that typing is being done on any such scale as is actually indicated. These surveys disclose the inadequate equipment for pneumococcus typing of some communities and indicate their lack of proper utilization in others.

¹ McGill, Kenneth. Pneumonia Mortality and Health Facilities for Typing Pneumococci. Division of Public Health, U. S. Public Health Service.

MEDICINE IN RUSSIA

In a book entitled "Socialized Medicine in the Soviet Union," just published by Henry E. Sigerist,¹ William H. Welch professor of the history of medicine at Johns Hopkins University, he makes the following statement

Nobody can deny that Soviet medicine, in the short period of twenty years and under most trying circumstances, has stood the test and has created powerful measures for the protection of the people's health. It has demonstrated that socialism works in the medical field too, and that it works well, even now, in the early beginnings of the socialist state. It is a system that is full of promise for the future—for a very near future.

In his preface Dr. Sigerist points out that he has spent two summers in Russia and that he has had the aid of leading authorities in the development of his information. He states that he has not wasted time in describing the poor institutions but that he has been primarily interested in the principles of Soviet medicine and in those positive achievements which represent a permanent gain.

At the same time there appears a book entitled "Assignment in Utopia" by Eugene Lyons,² who was for some seven years the United Press representative in Russia. He was sent to Russia because he had been known in this country as a communist and because his appointment was acceptable to the Russian government. He was probably the first to interview Stalin. As the seven years passed he gradually changed his point of view so that eventually he left Russia at the request of the government. In his book, based on seven years of life in Russia from 1930 to 1937, he reflects in four and one-half pages his personal observations of medicine in Russia. He says

We came, unluckily, to know a lot more about Soviet medical practice than most of our colleagues. Like the "stable" currency and the wonderful educational methods, the socialized medicine under the official statistical surface was a snarl of contradictions, shortages, and ineptness. Doctors and dentists regarded their obligatory work for the state as an exaction and depended on private practice for their real income. The more famous medical specialists did not budge for less than fifty or a hundred rubles, often it required "pull" to get their services at any price. The public health service was by all odds inferior to the free public and charitable health services available to the poor in cities like New York or Chicago.

Mr. Lyons describes the experience of his wife, who became ill and who was taken to Botkinsky Hospital. This section concludes

Billy improved rapidly despite the special care, and was soon well enough to watch the conduct of that hospital by way of sociological diversion. If I had not been there day after day and seen some of the primitive and careless procedure myself, I should have thought the details she told me were the effects of delirium. Only a few of the women were trained nurses—the others were ignorant girls of the servant type. They stomped up and down corridors and banged doors and called for one another in loud voices. Except under unusual circumstances bed linens were changed once a week. The blankets were not washed but merely disinfected so that they were crusted with the dirt and vomit of previous patients. The precious rules prohibited the bringing of linens, blankets, or other accessories from outside. But by devious means I smuggled in everything

Billy needed, and doctors, nurses, patients came to her ward to inspect and exclaim over the fleecy American blankets, the hospital buzzed with the news of a foreigner who changed her sheets, her nightgown, and even her pillow-cases, every day.

The doctors, Billy thought, were capable but overworked. I succeeded—again by outraging the blessed rules—in having our own physician, who was familiar with her case, treat her. As soon as she could be moved safely she returned home.

Ever after, the glowing reports of socialized medicine in Russia in American books and magazines have been a source of amusement to us. Always we have wished their authors only one punishment—a week or so as patients in the second-best hospital in Russia.

This book contains not only innumerable dramatic incidents but in addition some humorous descriptions of the visits of average American tourists to Russia which indicate how much value may be attached to their reports.

Dr. Sigerist is an experienced medical historian. He is also firmly committed to socialized medicine and to a planned and regimented economy. Certainly the world may learn much from the "Russian Experiment," but it is perhaps more scientific at present to consider it still as just an experiment and not as definite evidence of the established value of the Russian system of medical care.

SAFEGUARDS PROPOSED TO GOVERN
DISTRIBUTION OF DANGEROUS
DRUGS

Senator Copeland of New York and Representative Chapman of Kentucky have elicited from the Secretary of Agriculture a report on recent deaths resulting from the use of elixir of sulfanilamide-Massengill. The report shows a total of seventy-three deaths which have been confirmed and twenty which were presumptively due to the use of that preparation. The essential facts in the report, submitted to Congress by the secretary November 26, are already familiar to all who have read recent issues of *THE JOURNAL*.¹ The report includes four recommendations as follows:

1 License control of new drugs to insure that they will not be generally distributed until experimental and clinical tests have shown them to be safe for use. The definition of what constitutes a new drug should include (a) substances which have not been used sufficiently as drugs to become generally recognized as safe, (b) combinations of well known drug substances where such combinations have not become generally recognized as safe, and (c) well known drug substances and drug combinations bearing label directions for higher dosage or more frequent dosage or for longer duration of use than has become generally recognized as safe.

Exemption should be made for new drugs distributed to competent investigators for experimental work. A board of experts should be provided who will advise the Secretary of Agriculture on the safety of new drugs.

2 Prohibition of drugs which are dangerous to health when administered in accordance with the manufacturer's directions for use.

3 Requirement that drug labels bear appropriate directions for use and warnings against probable misuse.

4 Prohibition of secret remedies by requiring that labels disclose fully the composition of drugs. Many foreign countries

¹ Sigerist, Henry E. *Socialized Medicine in the Soviet Union*. New York: W. W. Norton & Co. 1937. p. 98.

² Lyons, Eugene. *Assignment in Utopia*. New York: Harcourt Brace & Co. 1937. pp. 437 and 440.

¹ Deaths following Elixir of Sulfanilamide Massengill. editorial *J. A. M. A.* 109:1367 (Oct. 23) 1456 (Oct. 30) 1544 (Nov. 6) 1727 (Nov. 20) 1937. Elixir of Sulfanilamide Massengill. Special Article from the American Medical Association Chemical Laboratory. *ibid.* 109:131 (Nov. 6) 1724 (Nov. 20) 1937.

now impose this requirement. Many drugs manufactured in the United States are exported to such countries under labels bearing such disclosure. The same drugs are sold to our citizens under labels that give no hint of their composition.

In view of the resolutions in response to which the Secretary of Agriculture submitted his report, the recommendations were limited to conditions relating to drugs and secret remedies. It is presumed however that, in drafting legislation to carry into effect those recommendations, something will be done to prevent poisoning due to the use of untried chemicals in foods and beverages, recent examples of which were the presence of tricresyl phosphate in Jamaica ginger and of wood alcohol in products intended for beverage purposes.

The recommendations of the Secretary of Agriculture may well form the basis of both federal and state legislation. Licensing, however, is for the protection of the public at large and should be paid for by general taxation and not by licensing fees, which the manufacturer would add to the cost of his product and thus add to the burden of illness. Resort to licensing and registration for the protection of public health is now an established procedure in federal and state governments, and it is within the discretion of Congress and the state legislatures to determine when, where and how that procedure shall be adopted. As long ago as 1895, Congress made licensing a condition precedent to the importation of milk from any state into the District of Columbia for sale. In 1902 a license was made a condition precedent to the importation of biologic products into the United States for human use and to the shipment of such products in interstate commerce. In 1913 the same licensing and registration principle was applied to the importation and shipment of biologic products for veterinary use. Even now there is pending in the House of Representatives a bill proposing to apply licensure as a condition precedent to the shipment in interstate and foreign commerce of surgical ligatures and sutures. The principle is recognized in bills pending in Congress as necessary for the protection of the public against contaminated foods under some conditions, and it is proposed that the Secretary of Agriculture be authorized to make such licensing necessary whenever in his judgment circumstances require it. A bill to that effect has passed the Senate and is pending in the Committee on Interstate and Foreign Commerce of the House of Representatives.

Licensing and registration legislation is preventive and not curative. It recognizes that damages recovered by civil suits of persons injured and imprisonment of offenders on the initiative of prosecuting attorneys do not recompense victims for their sufferings or return them to conditions of usefulness. Effective protection may be established by licensure or registration based on the adequacy of plant, equipment and material, the competence of the personnel and on the soundness of the value of methods or procedures.

manufacturer, distributor and seller must be fully responsible for any claim he makes as to the properties of his product and the government should not be "placed on the spot" by issuance of licenses which may be interpreted as endorsements or by laws requiring submission by manufacturers of confidential information.

The four requirements suggested by the Secretary of Agriculture are much to the point. Unless some more effective method than licensing is proposed—and none has yet been offered—legislation looking toward licensing or registration in association with full disclosure of formulas should be promptly enacted to protect the public against incompetent or unscrupulous purveyors of drugs.

Current Comment

A NOBEL PRIZE FOR SZENT-GYORGYI

Dr. Albert Szent-Gyorgyi of the University of Szeged has been named as 1937 Nobel prize winner in medicine for his contributions to the subject of biochemical oxidations and for outstanding work on the isolation and identification of vitamin C. After the World War, Szent-Gyorgyi, a Hungarian army medical officer, decided to devote his life to biochemical research. Several years later while working in Cambridge, England, he published an account of the isolation of a crystalline substance from adrenal tissue and from several plant products. There was reason for supposing that this newly discovered substance might be important in the oxidation-reduction systems of both plant and animal tissues. A solution of Szent-Gyorgyi's crystals had strong reducing properties, silver nitrate solution was acted on at room temperature to give a black precipitate of metallic silver. Because this reducing compound was a derivative of a sugar having six carbon atoms it was named "hexuronic" acid. Not until six years later was it shown that hexuronic acid is identical with vitamin C. The elucidation of the nutritional importance of hexuronic acid was largely the result of intensive work on the isolation of the antiscorbutic factor from lemon juice by King and his collaborators at the University of Pittsburgh. From a potent concentration of lemon juice an active crystalline product was obtained, the antiscorbutic potency of the crystals was unchanged by repeated crystallization, finally, the crystals were proved identical with hexuronic acid. From Szent-Gyorgyi's laboratory came an account of the identification of vitamin C with hexuronic acid. The pure vitamin has been synthesized. The older name hexuronic acid has been discarded and vitamin C is now known as ascorbic (ascorbic) acid. Recently Szent-Gyorgyi postulated the existence of another vitamin in foods. This factor appears to be closely associated with vitamin C but is not identical with it. The new vitamin is concerned with the permeability of the capillaries and it has been named vitamin P. The bestowal of a Nobel prize on Professor Szent-Gyorgyi is a fitting reward for his notable contributions to biochemistry and medicine.

Association News

ANNUAL CONGRESS ON MEDICAL EDUCATION AND LICENSURE

The Annual Congress of the Council on Medical Education and Hospitals of the American Medical Association will be held at the Palmer House, Chicago Feb 14 and 15, 1938. The Federation of State Medical Boards of the United States will participate in the congress. The program follows:

MONDAY MORNING, FEBRUARY 14

Report of the Council on Medical Education and Hospitals

Ray Lyman Wilbur MD LL.D. Chairman Stanford University Calif

Professional Licensure

John Kirkland Clark Counselor at Law New York

The Role of Chemistry in Medicine

Reverend Alphonse M. Schwittalla SJ Ph.D. Dean St. Louis University School of Medicine St. Louis

The Functions of the Special Examining Boards

Willard C. Rappleye MD Dean Columbia University College of Physicians and Surgeons New York

MONDAY AFTERNOON, FEBRUARY 14

Limiting Student Enrollment

Walter M. Kotschnig Ph.D. Smith College Northampton Mass

An Introduction to Clinical Medicine and Some Variations in the Curriculum of the Third and Fourth Years in Medical School

Burrell O. Raulston MD Professor of Medicine University of Southern California School of Medicine Los Angeles

Medical Student Instruction in Preventive Medicine

J. G. Fitzgerald MD Director School of Hygiene and Connaught Laboratories University of Toronto Toronto Canada

A New Approach in the Teaching of Nutrition to Medical Students

Salvatore Pablo Lucia MD Assistant Professor of Medicine and Lecturer in Medical History and Bibliography University of California Medical School San Francisco

Some Aims and Methods of Undergraduate Teaching in Obstetrics

James R. McCord MD Professor of Obstetrics and Gynecology Emory University School of Medicine Atlanta Ga

TUESDAY MORNING, FEBRUARY 15

SYMPOSIUM ON GRADUATE MEDICAL EDUCATION

John H. Musser MD Professor of Medicine Tulane University of Louisiana School of Medicine New Orleans

Irvin Abell MD President Elect American Medical Association Louisville Ky

James D. Bruce MD Director Department of Postgraduate Medicine University of Michigan Ann Arbor

Lester J. Evans MD Medical Associate The Commonwealth Fund New York

Arthur C. Bachmeyer MD Associate Dean School of Medicine of the Division of Biological Sciences University of Chicago

THE FEDERATION OF STATE MEDICAL BOARDS OF THE UNITED STATES

TUESDAY MORNING, FEBRUARY 15

(Program to be announced)

JOINT SESSION WITH THE FEDERATION OF STATE MEDICAL BOARDS OF THE UNITED STATES

TUESDAY AFTERNOON, FEBRUARY 15

American Students in Italian Medical Schools

William C. MacTavish AM Adviser to Premedical Students New York University Washington Square College New York

Foreign Students

Charles B. Pinkham MD Secretary California Board of Medical Examiners Sacramento

Hospital Internships as a Requirement for State Registration

Winford Smith MD Director Johns Hopkins Hospital Baltimore

RADIO BROADCASTS

The American Medical Association and the National Broadcasting Company present the fifth series of network health programs, beginning Oct 13 1937, and running weekly through June 15, 1938. The programs will be presented over the Red network each Wednesday at 2 p.m. eastern standard time, 1 p.m. central standard time, 12 o'clock noon mountain standard time and 11 a.m. Pacific standard time.

The dates and topics of the broadcasts for the coming month are as follows:

Diet

December 8—It Takes All Good Foods a well rounded diet and how to get it

December 15—Vitamins Minerals and Common Sense more about a balanced diet in special relation to minerals and vitamins

December 22—Milk from Farm to Table the production, transportation, pasteurization and home care of milk, its place in the diet, processed milks

December 29—Dietary Fads facts vs fallacies in relation to prevalent false notions on diet

The stations on the Red network are privileged to broadcast the program but, since it is a noncommercial program, they are not obligated to do so. Interest on the part of medical societies, women's auxiliaries and others may have weight with program directors of local stations. A personal visit to the program director might be advisable if the program is not being taken by a local station. This is an opportunity for the appropriate committees of county medical societies to indicate their interest in having this program broadcast in their community and to enlist the interest of other groups.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES NEW HOSPITALS EDUCATION AND PUBLIC HEALTH)

ALABAMA

Personal—Dr. Charles M. Cole, Chatom, has been appointed health officer of Washington County, succeeding Dr. Isaac C. Sumner, Chatom, who has been named assistant to the health officer of Mobile County, it is reported.—Dr. Eva F. Dodge, Winston-Salem, N. C., will direct and organize antepartum clinics throughout Alabama for the state department of health, headquarters will be in Montgomery.—James G. McAlpine, Ph.D., Montgomery, has resigned as director of the state health department laboratories to return to his former home in Connecticut, it is reported.

CALIFORNIA

Venereal Disease Control Center—An appropriation of \$32,244 has been made available through the social security act to establish a venereal disease control center in southern California under the direction of Dr. George Parrish, health officer of Los Angeles. The program includes the employment of thirty-six persons as nurses, social workers and laboratory technicians.

Five Year Program of Graduate Education—The California Medical Association has prepared a program of graduate education to be delivered throughout the state over a five year period. The conferences will be clinical and not didactic. The University of California, Stanford University, University of Southern California and the College of Medical Evangelists will cooperate with the state medical association by making available members of the faculties as instructors for these conferences. The California Tuberculosis Association, the California Heart Association and the Los Angeles County Clinical Statistical Association on request, will recommend members of their organizations suitable for teaching tuberculosis and heart disease. In addition to the specialties, the courses will cover abdominal disease, diseases of metabolism, genito-urinary and venereal infections, diseases of the central nervous system, laboratory equipment and technic drugs vaccines and serums.

CONNECTICUT

Personal—Dr. Delmar Allan Craig has resigned as head of the Charlotte Hungerford Hospital Torrington to accept a similar position at the Eastern Maine General Hospital, Bangor, according to the *New England Journal of Medicine*.

Hospital and Medical Society Receive Bequest—The Hartford Medical Society will receive the professional library and instruments of the late Dr. Edward K. Root, Hartford, who died August 12. The will also contains a bequest of \$2,000 for the Hartford Hospital, to be known as the Edward K. Root Fund, the income from which is to be used for providing medical periodicals for the house staff of the hospital.

Society News—Dr. Cornille Heymans, professor of pharmacology and therapeutics, University of Ghent, Belgium, discussed 'Blood Pressure Regulation and Experimental Hyper-

tension" before the Yale Medical Society, New Haven, November 15. At a joint meeting of the society with the atypical growth study unit, November 10, Dr William E Gye, director, Imperial Cancer Research Foundation of London, spoke on "Tumors Transmissible with Viruses"

FLORIDA

New Officers of State Board—Dr Julius C Davis, Quincy, was recently elected president of the state board of medical examiners and Dr Harold D Van Schaick, Jacksonville, vice president

Society News—Dr Herbert L Bryans, Pensacola, was elected president of the Gulf Coast Clinical Society at its annual session in Biloxi, Miss., November 4. Pensacola was designated as the place of the next meeting. Dr Jacques H Baumhauer, Mobile, Ala., is secretary-treasurer

IDAHO

Society News—At a meeting of the Pocatello Medical Society, November 4, Dr Casper W Pond, Pocatello, spoke on "Blood Dyscrasias in Relation to Infections and Hemorrhage"

New Tuberculosis Hospital—Lava Hot Springs in Bannock County has been selected as the site for a new \$208,000 state tuberculosis hospital, according to *Northwest Medicine*. Construction must be started by December 15, according to terms of the federal grant, which amounts to 45 per cent of the total cost

ILLINOIS

Personal—Dr Arthur E Lord, Plano, surgeon general, Illinois National Guard, was guest of honor at a dinner in Chicago, November 17, marking his election as president of the Association of Military Surgeons of the United States

Change in Typhoid Quarantine Regulations—The state department of health announces a change in the quarantine regulations concerning typhoid, requiring all members of a household in which there is a typhoid patient to submit two specimens for laboratory examination before they are released from quarantine. Heretofore unaffected persons on the premises who were immunized against typhoid were excused from quarantine. The purpose of the change is to facilitate the detection of carriers, it was stated. Up to November 10, 536 cases of typhoid had occurred in Illinois and twenty-two carriers had been identified

State Public Health Conference—The annual state conference on public health will be held in Springfield, December 9-10, under the auspices of the state department of public health. The speakers will include

Dr Philip C Jeans, Iowa City, Nutritional Deficiency in Public Health
Herbert F Moore, Sc D, Urbana, Social Engineering in the Health Field

Dr Frederick T Lord, Boston, Lobar Pneumonia and Serum Therapy

Dr Julius Levy, Newark, N J, Preventive Mental Hygiene

Dr Irving S Cutter, Chicago, Education in Preventive Medicine

Dr Don W Gudakunst, Detroit, Newer Trends in School Health Practice

Dr Charles F McKhann, Boston, Preventing Hospital Infections

Dr David C Elliott, Hagerstown, Md, A Venereal Disease Program

Dr Paul H Harmen, Springfield, Epidemiology of Polymyositis

Dr Guy Howard Gowen, Springfield, Trailer Laboratory in Typhoid Control

Chicago

Branch Society Meetings—Dr Walter C Alvarez Rochester, Minn., will address a joint meeting of the Englewood and Stock Yard branches of the Chicago Medical Society, December 7, his subject will be "The Care of the Aged". At a meeting of the Evanston branch, December 2, the speakers included Dr Budd C Corbus on "A Serological Control of Neisserian Infections with the Bouillon Filtrate". Dr Russell M Wilder, Rochester, Minn., discussed "Pathogenesis and Etiology of Diabetes" at a meeting of the North Side branch, December 2. Drs William H Browne and Julius H Hess will present the scientific program before the North Shore branch, December 7, their subjects are "Prevention and Management of Premature Labor," and "Care of Premature Labor," respectively

IOWA

Personal—Dr Harry P Lee has resigned as professor of genito-urinary surgery at the State University of Iowa College of Medicine, Iowa City, to enter a medical school in Spokane, Wash.—Dr Anton R Schier, medical superintendent of the State Hospital at Woodward, School for Feeble-minded at Woodward

Refresher Courses—The speakers' bureau of the Iowa State Medical Society began its third series of refresher courses this fall at Osage and Nevada, November 1. Two lectures are given at each meeting, one on obstetrics and one on pediatrics, over a period of five weeks. Cooperating are the State University of Iowa College of Medicine, the Iowa Pediatric Club, the Central Association of Obstetricians and Gynecologists and the state department of health. Lecturers include Drs Roy I Theisen, Dubuque, Philip C Jeans, William F Menert, Everett D Plass and John H Randall, all of Iowa City; Glenn E Harrison, Mason City; John M Havek, James E Dyson and Lester D Powell, Des Moines, and Cecil W Seibert, Waterloo

KANSAS

Personal—Dr Charles B Stephens, Iola, has been appointed health officer of Topeka. Dr Stephens was health officer of Allen County for several years and has been secretary of the Allen County Medical Society since 1933

"Cancer Specialist" Cooper Enjoined—W W Cooper, self-styled cancer specialist of Altoona, has appealed to the Supreme Court of Kansas from a recent decision of a district court enjoining him from practicing the healing art in Kansas. Cooper had undertaken to treat cancer, using a zinc chloride paste. His counsel is E M Perdue, who is both a physician and a lawyer and who, according to information in the files of the *American Medical Association*, appeared in 1932 as a witness for Norman Baker of Muscatine, Iowa, in his unsuccessful suit against the Association

Society News—The Sedgwick County Medical Society was addressed by Dr Ernest M Seydell, Wichita, November 16, on "Treatment of Septicemia—A Modern Conception". Dr John W Duncan, Omaha, discussed "Surgical and Hormone Treatment of Undescended Testicle" before the Wyandotte County Medical Society, Kansas City, November 2. At a joint meeting of the medical societies of Marion, McPherson and Harvey counties in Marion, October 27, Drs Karl A Menninger and Norman Reider, Topeka, discussed "The Psychoneurotic and the General Practitioner" and "Headaches" respectively

MICHIGAN

Personal—Dr Isaac N LaVictoire, assistant physician at the Kalamazoo State Hospital, has been appointed psychiatrist for the Hospital of the State House of Correction and branch prison at Marquette and the Michigan State Reformatory at Ionia, it is reported. He will be succeeded at Kalamazoo by Dr Charles O Holder

Free Drugs for Venereal Diseases—The Michigan State Department of Health announced that free distribution of drugs in the campaign against venereal diseases was to begin December 1. Newspapers reported November 12. About \$50,000 annually is available to finance this work incident to the campaign and distribution centers for the drugs will be located in the health departments of Detroit, Lansing, Grand Rapids, Flint, Saginaw, Pontiac, Jackson, Kalamazoo, Battle Creek and Marquette

New Laboratory for State Health Department—The new \$250,000 laboratory of the state department of health on the DeWitt Road, just northwest of Lansing was dedicated November 12. Dr Frederick G Novy, dean emeritus of the University of Michigan Medical School, Ann Arbor, and professor emeritus of bacteriology, gave the address at a banquet at the Hotel Olds, under the auspices of the Michigan branch of the Society of American Bacteriologists and directors of registered laboratories. Dr Novy assisted in establishing the state's first public health laboratory in 1887. The dedication of the new laboratory also served to commemorate the fifty years of public health laboratory service in Michigan. The new three story building was financed in part by federal funds and provides laboratory facilities for the department of agriculture and the state board of pharmacy as well as for the diagnostic and research control laboratories of the state department of health

Society News—At the annual meeting of the Michigan Association of Industrial Physicians and Surgeons in Detroit, October 12, Dr Earl I Carr, Lansing, was elected president. Dr Francis T McCormick, Detroit, vice president and Dr Donald F Kudner, Jackson, secretary. Dr William G Gamble Jr, Bay City, addressed a joint meeting of the Menominee and Marinette medical societies, October 25, on syphilis. At a meeting of the Ingham County Medical Society, October 19, the creation of a county health unit was unanimously approved. Dr George T Antlen Jr, Grand Rapids, addressed the Wexford County Medical Society in Cadillac

November 11, on "Basic Principles of Fractures"—Dr Walterman Walters, Rochester, Minn., discussed "Developments in Surgery of the Stomach and Duodenum" before the Kalamazoo Academy of Medicine November 16—Dr Charles E. Pope, Evanston, Ill., addressed the Muskegon County Medical Society in Muskegon, November 19, on "Cancer of the Rectum"

MINNESOTA

Society News—At a meeting of the Park Region Medical Society in Fergus Falls, October 13, Dr Martin Nordland, Minneapolis, discussed gonorrhea—The Wabasha County Medical Society was addressed at Kellogg, October 7, by Dr Hugh R. Butt, Rochester, on "Medical Treatment of Diseases of the Gallbladder"—Among others, Dr Magnus C. Petersen, Willmar, discussed "Cisternal Punctures with Special Reference to the Aged" before the Minnesota State Medical Officers Association in Willmar, October 26

NEW YORK

Health Department Widens Pneumonia Serum Distribution—With increased funds provided by the 1937 legislature the state health department will have available to physicians sufficient antipneumococcus serum of types I and II to meet an anticipated increase in demand and in addition will distribute serums of types V, VII and VIII. Initial shipments of the latter three types have been sent to twenty-four district laboratories

Advisory Board on Narcotic Control—An advisory board to assist the new bureau of narcotic control in the state department of health has been appointed by the state health commissioner, Dr Edward S. Godfrey Jr. The members represent the state medical, dental, veterinary and pharmaceutical associations and the drug manufacturing industry. They are Dr Homer L. Nelms, Albany, Harvey J. Burkhart, DDS, Rochester, L. L. Parker, DVM, Catskill, Nicholas Gesoalde, Brooklyn, pharmacist, and Carl M. Anderson, New York, representative of the Drug, Chemical and Allied Trades section of the New York Board of Trade

New York City

Restrict Sale of Sulfanilamide—The New York City Board of Health has prohibited the sale of sulfanilamide throughout the city except on prescription of a physician, according to *New York Medical Week*

Hospital Lectures—The Bronx Hospital began a series of afternoon lectures for physicians November 9 with an address by Dr Alan L. Barach on "Peripheral Circulatory Failure and Acute Pulmonary Edema Occurring as Complications in Pneumonia." Dr Elliott P. Joslin, Boston, will give the second December 7 on "Diabetes Mellitus," and Dr Russell L. Cecil the third December 21 on "Chronic Arthritis"

District Meeting—The Second District Branch of the Medical Society of the State of New York held its annual meeting at Garden City November 17. The program was on cancer and renal pathology with exhibits and clinical lectures on both subjects. The speakers were Drs Norman Treves, New York, Algernon S. Warinner and Gladys Carr, Hempstead, L. I., on cancer, Tasker Howard, Howard T. Langworthy and Theodore J. Curphey, all of Brooklyn and Francis Riley, Jamaica, on renal pathology

Francis P. Garvan Dies—Francis P. Garvan, president of the Chemical Foundation Inc., died November 7 of pneumonia at his home, aged 62. Mr. Garvan, a lawyer, was known for his efforts to stimulate interest in chemistry, particularly as applied to medicine. Through the foundation he provided large sums for cancer investigation at Johns Hopkins Hospital and since 1930 has contributed to the support of the *American Journal of Cancer*. In 1928 he established a fund of \$195,000 known as the John J. Abel Fund for Research on the Common Cold, also at Johns Hopkins. An important publication of the foundation some years ago was "Chemistry in Medicine," to which forty-three scientists contributed articles on various fields under the editorship of the late Prof. Julius Steglitz, Chicago. Mr. Garvan was born in Connecticut and graduated from Yale University in 1897 and from New York University Law School in 1899. During the World War he became chief of the U. S. Bureau of Investigation in New York and later was United States Alien Property Custodian. From 1919 to 1923 he was dean of the Fordham University Law School. He was the only layman ever to receive the Priestley Medal of the American Chemical Society, which was conferred on him in 1929. The American Institute of Chemists also honored him with a medal and he had received honorary degrees from Fordham, Yale, Trinity and Notre Dame universities.

NORTH CAROLINA

Personal—Dr Charles D. Thomas of the staff of the North Carolina Sanatorium for the Treatment of Tuberculosis Sanatorium, has been appointed assistant superintendent and associate medical director, succeeding Dr Samuel M. Bittinger, who has been made assistant superintendent and medical director of the new sanatorium at Black Mountain.

OHIO

Personal—Dr Leo F. Hall, Cleveland, deputy commissioner of Cuyahoga County, has been appointed commissioner. Dr James A. Doull has been acting commissioner since the expiration of the term of Dr Robert Lockhart.

University News—The Commonwealth Fund of New York has made a grant of \$10,857 annually for three years to the Western Reserve University School of Medicine, Cleveland, for the research of Dr Joseph M. Hayman, associate professor of medicine, on chronic nephritis.

Society News—Dr James V. Seids, Cleveland, addressed the Huron County Medical Society, Willard, November 10, on "Treatment of Gallbladder Disease and Its Complications"—Dr Herbert L. Brumbaugh, Dayton, addressed the Warren County Medical Society, Lebanon, November 2, on "Treatment of Fractures of the Hip"—Dr Fred Wise, New York, addressed the Academy of Medicine of Cincinnati, November 16, on "Further Experiences with Mapharsen: Its Use in Latent Syphilis"—James R. Blayney, DDS, Chicago, addressed the annual joint meeting of the Toledo Academy of Medicine and the Toledo Dental Society, November 5, on "Present Day Evaluation of a Pulpless Tooth"

PENNSYLVANIA

Society News—Dr Joseph Earle Moore, Baltimore, addressed the Cambria County Medical Society, Johnstown, November 11, on "Syphilis: Diagnosis and Treatment"—Dr Joseph A. Perrone, Pittsburgh, addressed the Fayette County Medical Society, Uniontown, November 4, on "Bronchoscopy as an Aid in the Diagnosis and Treatment of Pulmonary Conditions"

Secretary Donaldson Honored—At the annual meeting of the Medical Society of the State of Pennsylvania in Philadelphia in October the past presidents and the board of trustees of the society presented to Dr Walter F. Donaldson, Pittsburgh, secretary of the society for nineteen years, an oil portrait of himself. Dr Arthur C. Morgan, Philadelphia, made the presentation speech.

Memorials at Reading Hospital—Three memorials to persons prominent in the development of Reading Hospital, were unveiled at the annual staff banquet November 3. Tablets were erected to Dr Charles H. Hunter, one of the founders of the hospital, who died in 1870, and to Dr Charles G. Loose, for fifty-three years a member of the staff, who died in 1935. The third memorial was a bronze head of Mr. Gustav Oberlaender, for many years president of the board of directors. Dr William Gerry Morgan, Washington, D. C., who was an intern at the hospital in 1893, gave the address at the ceremony.

Philadelphia

Hospital News—Mount Sinai Hospital began its sixth series of health talks for the public with a lecture November 17 by Dr Frank E. Levy, entitled "Has Diabetes Been Conquered?"

Cancer Forum—The women's auxiliary of the Lankenau Hospital Research Institute presented a cancer forum November 29-30 at the Bellevue-Stratford under the direction of Mrs. Alfred M. Gray and Dr. Stanley P. Reimann, research director of the institute. Among the speakers were:

- Dr. Burton T. Simpson: Buffalo Activities of New York State in the Control of Cancer
- Dr. Madge T. Macklin: London Ont. The Vexations and Compensations of Trying to Study Human Heredity Especially in Cancer
- Dr. Ludwig Hektoen: Chicago and Washington D. C. The Federal Government in Cancer
- Dr. Logan Clendening: Kansas City Mo. Some Issues at Stake in the Cancer Problem
- Dr. Foster Kennedy: New York Psychological Attitudes Toward Cancer
- Oscar Riddle, Ph.D.: Cold Spring Harbor N. Y. Educational Aspects and Luminous Research

Various organizations were represented among the sponsors of the forum.

Society News—The Philadelphia County Medical Society marked the one hundred and fiftieth anniversary of the signing of the Constitution at its meeting November 22 with the following program: Roland S. Morris, president of the American Philosophical Society, "The Birth of the Constitution and the American Philosophical Society"; Dr. George P. Muller

"Early History of the College of Physicians", Dr William Pepper, "Early Philadelphia Medicine and the University of Pennsylvania," and Dr William Egbert Robertson, "Dr Rush and the Signers of the Constitution"—Among speakers at a meeting of the Physiological Society of Philadelphia, November 15, were Ben King Harned, Ph D., and Versa V Cole, on "Hyperglycemia Produced by a Synergetic Action of Strychnine and Physostigmine", Drs Ernest A Spiegel and John B Price, "Conduction of Labyrinthine Impulses to the Cerebral Cortex."

TEXAS

Advisory Board for Crippled Children—Drs William B Carrell, Dallas, and Edwin G Schwarz, Fort Worth and Mr Robert Jolly, superintendent of the Baptist Hospital, Houston, have been appointed to a board to advise the crippled children's division of the state department of education, it is reported.

Personal—Dr William L Baugh, Lubbock, was appointed a member of the state board of health November 2, to succeed the late Dr Silas J Alexander, Hearne—Dr Frances T Vanzant Houston, will go to Spain to join an American medical relief unit, it is reported—Dr and Mrs Charles E Mays, San Angelo, recently celebrated their golden wedding anniversary, according to the *Texas State Journal of Medicine*—Dr Wilfred J Allison, recently of Baltimore, has been appointed medical director of the Southwestern Life Insurance Company with headquarters in Dallas, it is reported.

District Meetings—The annual meeting of the Fourth District Medical Society was held in Coleman October 19-20. Among the speakers were Drs Thomas H Cheavens, Dallas, "Use and Misuse of Sedatives and Hypnotics", George R Enloe, Fort Worth, "Acute Infections of the Hand", Rudolph K Harlan, Temple, "The Tachycardias" and William E Schulkey, San Angelo, "Trend of Traumatic Surgery"—At a meeting of the Eleventh District Medical Society in Jacksonville, October 13, the speakers included Drs Reuben B Anderson Jr, Fort Worth, assistant secretary of the Texas State Medical Association, on "Activities of the State Medical Association", Leroy Trice, Palestine, "Surgical Treatment of Nephroptosis," and Percy M Girard, Dallas, "Treatment of Recent Cases of Acute Poliomyelitis."

WASHINGTON

Society News—Among speakers who addressed the Spokane County Medical Society, Spokane, November 18, were Drs Asa E Seeds, on "X-Ray Irradiation in Cervical Adenitis in Children", Jean D Kindschi, "Congenital Malformations of the Uterus," and George Clifford Smith, "Intravenous Medication"—A program on pneumonia will be presented at the meeting of the King County Medical Society, Seattle, December 6, by Drs Harry J Friedman, Theodore W Houk and Donald G Evans.

County Society in New Offices—The King County Medical Society has recently opened new executive offices in the Cobb Building, Seattle, with Miss Ernestine C Appy as executive secretary. The new quarters consist of the society's library, a reception room, the secretary's office an ediphone room and a committee room. The ediphone room is arranged so that members may record notes on their reading and take the wax records to their own offices for transcription, or if they do not have reproducing machines their secretaries may use the equipment at the library.

WISCONSIN

In Memory of Dr Gaenslen—The Milwaukee school board recently announced that a new orthopedic school now under construction will be named the Frederick J Gaenslen School for Crippled Children in honor of the late Dr Gaenslen for many years orthopedic surgeon to the Columbia and Milwaukee hospitals and consulting orthopedic surgeon to the Milwaukee Children's Hospital. Dr Gaenslen who died March 14, was a member of the Council on Physical Therapy of the American Medical Association from 1931 to 1934.

Society News—Drs Geza de Takats Chas. and Frances J Kinsella, Minneapolis, addressed the La Crosse Medical Society, La Crosse, October 12 on "Finger Accidents" and "The Application of Sincalculous Pulmonary Disease" respectively.—Dr Hardgrove, Milwaukee, addressed the Winnebago Medical Society October 21 on "Convalescence and"—Dr Reed M Nesbit Ann Arbor M

"Transurethral Prostatectomy Indications for and the Limitations of Operation" The motion picture on syphilis produced by the American Medical Association and the U S Public Health Service was shown at this meeting—Dr Elmer L Sevringhaus, Madison, addressed the Milwaukee Academy of Medicine November 16 on "Endocrine Therapy in General Practice."

ALASKA

Research Laboratory in the Arctic—Dr Victor E Levine, professor of biological chemistry and nutrition and head of the department, Creighton University School of Medicine, Omaha, has established a medical and biological laboratory in the arctic at Point Barrow as a cooperative research project of the U S Public Health Service and Creighton University. Dr Levine with an assistant, Delbert F Foord of the University of California, arrived in Alaska in August and expects to remain for a year. The laboratory equipment includes x-ray apparatus, a basal metabolism machine, a biophotometer for determining vitamin A deficiency, an apparatus for estimating civitamic acid in the blood, an instrument for measuring capillary fragility, biologic stains, bacteriologic mediums and reagents for blood and urine chemistry.

GENERAL

Society News—Dr Charles S Holbrook, New Orleans was chosen president-elect of the Southern Psychiatric Association at its annual meeting in San Antonio, Texas, in October, and Dr George P Sprague, Lexington, Ky, was installed as president. The next meeting will be in Atlanta.

Academy of Dermatology and Syphilology to Be Organized—At a meeting in Detroit January 14-15 at which the Detroit Dermatological Society will be host to the Central States Dermatological Society, the Dermatological Conference of the Mississippi Valley and other local organizations, it is proposed to organize an Academy of Dermatology and Syphilology. All full time practitioners and teachers of dermatology and syphilology in the United States and Canada have been invited to attend. Early plans for the organization were reported in THE JOURNAL, October 9, page 1208.

Golfers' Special to San Francisco—A "golfers' special" is being arranged for persons attending the annual session of the American Medical Association in San Francisco, June 13-17. The trip includes sightseeing, entertainment, six games of golf en route, and a day in Hollywood. The cities to be visited include New Orleans, Houston, Galveston, San Antonio, Los Angeles, Del Monte, San Francisco, Portland, Seattle, Vancouver, Lake Louise and Banff will be visited on the way back. Nongolfers as well as golfers and their ladies are invited. Additional information may be obtained from Dr Walt P Conaway, president, American Medical Golfing Association, 1723 Pacific Avenue Atlantic City, N J.

New Annual Prize—The American Association of Obstetricians, Gynecologists and Abdominal Surgeons announces a new annual prize of \$500 for a thesis to be presented at the annual meeting of the association. Those eligible include (1) interns, residents or graduate students in obstetrics, gynecology and abdominal surgery and (2) physicians who are actually practicing or teaching those subjects. Competing manuscripts must be presented in triplicate under a nom de plume before June 1 to the secretary, Dr James R Bloss, 418 Eleventh Street, Huntington, W Va. They must be limited to 5000 words with such illustrations as are necessary for a clear exposition of the thesis and must be typewritten (double spaced) on one side of the paper, with ample margins. The paper must be presented at the next annual meeting (September) of the association, without expense to the association and in conformity with its regulations.

Junior Chamber of Commerce to Cooperate in Venereal Disease Campaign—Dr Roy L Smith, Tulsa, Okla., has been appointed chairman of a National Health Committee organized by the United States Junior Chamber of Commerce at its recent annual convention to cooperate with the U S Public Health Service and with state and local medical societies in the current campaign against venereal disease. Dr Smith is organizing committees in every state under the chairmanship of physicians, when they are available, dentists or qualified laymen. Twenty-two states have been organized so far. The committee plans to carry on an intensive campaign, with its own organization in order to acquaint young business and professional men with the venereal disease problem to cooperate with medical societies and health departments in arranging programs and to campaign for legislation and appropriations to deal with the diseases.

Dr Mosher Receives Academy Award—Dr Harris P Mosher, Walter Augustus LeCompte professor of otology and professor of laryngology, Harvard University Medical School and the graduate school, Boston, was presented with the gold Medal of Honor of the American Academy of Ophthalmology and Otolaryngology at its annual convention in Chicago October 13 for distinguished service in the field of otolaryngology and for fostering graduate education in this specialty. The medal was presented at the annual banquet of the academy, at which Dr Mosher as guest of honor delivered the principal address. A native of Maine, Dr Mosher graduated from Harvard in 1896. He was chairman of the Section on Laryngology, Otology, and Rhinology of the American Medical Association in 1933 and president of the American Academy of Ophthalmology and Otolaryngology in 1928, he was installed as president of the American Otolological Society in June of this year and has served for many years as president of the American Board of Otolaryngology.

Medical Bills in Congress—The Secretary of Agriculture has in compliance with S Res 194 and H Res 352, submitted a report to the Senate and to the House on deaths due to Elixir of Sulfanilamide-Massengill. To protect the public from drugs which are dangerous because of their inherent toxicity, the Department of Agriculture, in its report, recommended that legislation be enacted to provide at least the following: (1) License control of new drugs to insure that they will not be generally distributed until experimental and clinical tests have shown them to be safe for use, (2) prohibition of drugs which are dangerous to health when administered in accordance with the manufacturer's directions for use, (3) requirement that drug labels bear appropriate directions for use and warnings against probable misuse, and (4) prohibition of secret remedies by requiring that labels disclose fully the composition of drugs. These recommendations, the report states, are limited to provisions which the department believes should be enacted to safeguard the public from the dangers of drugs of one type. That type includes the inherently toxic drugs, such as elixir of sulfanilamide, dinitrophenol and cinchophen. *Bills Introduced*—H R 8453, introduced (by request) by Representative May, Kentucky, proposes to provide for a commissioned strength of 14,659 for the regular army and specifies that "the proportional increases as computed under this Act for the Medical Administrative Corps and Veterinary Corps shall be assigned to the Dental Corps." H R 8474, introduced by Representative Dixon, Ohio provides that in the administration of laws conferring benefits on veterans of the World War women citizens of the United States who served overseas with the War Department during the World War, as members of "The Army Women's Overseas Unit" shall be held and considered to have enlisted, enrolled or drafted into active service in the military forces of the United States.

CANADA

Society News—Dr Byron P Stookey, New York, addressed the Academy of Medicine of Toronto, November 2, on "The Treatment and Management of Vertebral Fracture Dislocations in Association with Spinal Cord Injuries."—Dr George S Young, Toronto, was elected president of the Royal College of Physicians and Surgeons of Canada at its annual meeting in Ottawa, October 31.

LATIN AMERICA

Sight Conservation Institute in Cuba—Announcement is made of the formation of the "Instituto Protector de la Vista" in Havana with Dr Tomas R Yanes as president and with leaders in various fields concerned with the problem as members of its directing council. The institute plans to make statistical studies of the causes of diseases of the eye and to carry out an educational campaign concerning them.

FOREIGN

Society News—The fourth International Congress of Comparative Pathology will be held in Rome in 1939. Subjects so far proposed for discussion are virus diseases, heredity in pathology, immunity in protozoan diseases and some topic in the field of phytopathology.

Eastman Dental Clinic in Paris—The Eastman Institute of Dentistry and Stomatology in Paris, a benefaction of the late George Eastman Rochester, N Y, was opened October 21. This is the fifth dental clinic for children erected in Europe with funds provided by Mr Eastman the others being in London, Rome, Brussels and Stockholm. Harvey I Burkhardt DDS Rochester, presented the institute to the city of Paris as a representative of the Eastman interests. Dr Burkhardt laid the cornerstone of the building July 29 1935.

Congress for Experimental Cytology—The fifth International Congress for Experimental Cytology will be held in Zurich August 7-12, 1938, immediately before the International Physiological Congress. The sessions will be devoted to symposiums on the following subjects: epithelium in cultures and in the organism, structure of chromosomes, mechanism of mitosis, cancer cells and normal cells, experimental cytology and the study of viruses, ultrastructure of protoplasm and its products and chemistry of the cell. Those wishing to take part in the program should submit their papers (with a summary not exceeding 200 words) to Prof W von Mollendorff, 9 Plattenstrasse, Zurich, Switzerland, before April 15, 1938. Information may be obtained from Professor von Mollendorff or from Dr Harald J C Okkels, Institute for Pathological Anatomy, University of Copenhagen.

CORRECTION

Carcinoma Instead of Sarcoma—In a New York City news item in THE JOURNAL, November 6, reporting a meeting of the New York Pathological Society on October 28, the title of a paper by Drs Andrea Saccone and Abraham Rosenthal was given as "Colostrum Cell Sarcoma of the Breast." This should have been "Colostrum Cell Carcinoma of the Breast."

Government Services

Physicians Wanted for Civilian Conservation Corps

The Medford, Ore, district of the Civilian Conservation Corps has several openings for physicians at a salary of \$225 a month, the district adjutant reports. Those interested should send their qualifications to the District Surgeon, Medford CCC District, Medford, Ore.

Consultant in Development of Orthopedic Services

Dr John C Wilson, clinical professor of orthopedic surgery, University of Southern California Medical School, Los Angeles, has been appointed consulting orthopedist on the staff of the Crippled Children's Division of the Children's Bureau, U S Department of Labor. He will serve as consultant for the Western states in the development of services for crippled children under the social security act. The law authorizes an annual appropriation of \$2,850,000 to be administered by the Children's Bureau for extending and improving services for crippled children in rural areas and areas of severe economic distress. Forty-five states, Alaska, Hawaii and the District of Columbia are now receiving federal grants for this work. Dr Wilson graduated from the University of California Medical School, San Francisco, in 1912. He enlisted with the medical corps of the U S Army in 1917 and at the time of his discharge in 1919 was chief orthopedic surgeon of General Hospital number 6 in Atlanta, Ga. He is president-elect of the American Academy of Orthopedic Surgery.

Positions with the Children's Bureau

The U S Civil Service Commission announces open competitive examinations for the following positions with the Children's Bureau, U S Department of Labor: principal specialist in maternal and child health at a salary of \$5,600 a year; senior specialist in maternal and child health, \$4,600; specialist in maternal and child health, \$3,800; and associate in maternal and child health, \$3,200. Employment lists will be established for the following branches: pediatrics, obstetrics, orthopedics, general practice (maternal and child health) and psychiatry for children. The positions will include both administration and research. Candidates will not be required to report for examination at any place but will be rated on the extent and quality of their education and experience. Details of the qualifications may be obtained from the Secretary, Board of Civil Service Examiners, at any first class postoffice, from the Civil Service Commission at Washington or from the district office in any of the following cities: Atlanta, Boston, Chicago, Cincinnati, Denver, New Orleans, New York, Philadelphia, Seattle, St Louis, St Paul, San Francisco, Honolulu, Balboa Heights, C Z and San Juan, P R. Applications must be on file with the commission at Washington not later than December 28 if received from states other than the following for which the date is December 31: Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington and Wyoming.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Nov 6, 1937

Juvenile Extension of National Health Insurance

The minister of health has introduced in the House of Commons the national health insurance (juvenile contributors and young persons) bill. This provides medical benefit for boys and girls who on leaving school become employed before reaching the age of 16, at which age national health insurance benefit previously began. The bill will thus bridge the gap in medical supervision which now exists between the school medical service and the beginning of insurance. It is calculated that 1,000,000 boys and girls will come under the scheme. The cost of medical benefit and its administration for these juveniles will be defrayed, like existing health insurance, as to six sevenths in the case of boys and four fifths in the case of girls out of the contributions of the juveniles and their employers, and as to the remainder by the government. It is estimated that the total amount required to cover the cost of medical benefit, including the capitation fee to panel physicians of \$2 a year, the supply of medicines and administrative expenses of insurance committees, will be \$3 a head per annum.

Medical School in London for Women

For many years London has had twelve undergraduate medical schools. The establishment of another is a new event for the present generation. The West London Hospital, which has for forty years been a postgraduate school, is now to become a full medical school. The opportunity has been provided by the deficient accommodation in London for the clinical teaching of woman students. There is only one medical school (300 beds) devoted to the medical education of women, and most of the schools do not admit them or take them only in a limited number. It is not proposed that the West London Hospital shall confine its school to women but that, unlike the other medical schools, students shall be taken regardless of sex. The dean, Dr M. E. Shaw, states that the proportion of students to beds will not exceed one to three, which is the recognized optimum. As the number of beds in the hospital is 239 it will take some years for the school to fill. It is not proposed to abandon the postgraduate teaching which the school has successfully carried on for many years and in which it has been a pioneer. This new medical school marks an advance in the movement for the medical education of women which has had to fight a long battle against prejudice. The Senate of the University has for some time been troubled with the inadequate provision in London for the clinical training of women. One of its members, the dermatologist Sir Edward Graham Little, states in a letter to the *Times* that twenty women who had pursued their preclinical studies in the schools of the university were unable to secure entrance for the clinical course at any London school. The recognition by the government of the West London Hospital as an "external" school of the university, which is no doubt preparatory to its becoming a constituent school when it can be shown that its financial position is satisfactory, will go a long way to solve the problem.

International Peace Campaign

The first conference of the International Peace Campaign was held at University College, London. A discussion took place on the duty and right of physician to take an independent and critical attitude to all questions of war and war preparations. The manner in which the profession was now committed to cooperate in air raid precautions without having had them examined and without impartial scientific efficacy was deplored. War was compared to its prevention was as much the duty of the physician.

prevention of other causes of suffering and death. Two physicians described a similar movement in the Netherlands. The following resolution was carried unanimously: "That the medical profession has the duty and right to assume an independent and critical attitude in regard to government policy affecting war and war preparations." The practical steps to be taken by physicians in all countries were discussed. It was thought that more discussion on international affairs as they affected physicians might take place in the branches of the British Medical Association. The resolution passed at the annual meeting of the British Medical Association, held this year at Belfast, initiating an inquiry into the psychological causes of war was considered a great advance. The value of international medical congresses in obtaining cooperation and understanding was stressed.

The Treatment of Intestinal Strangulation

At the Research Laboratories of the Royal College of Surgeons, Mr G. C. Knight has done important work on intestinal strangulation. It has been previously suggested that the toxic depressor substances found in the urine of human patients with known strangulation are similar to those demonstrated in the intestine, peritoneal fluid and blood of animals in which strangulation has been experimentally produced. To test this, blood and peritoneal fluid from human patients were injected intravenously into the cat. It was found that depressor substances appear in the peritoneal fluid within two hours of the onset of strangulation and then increase as the viability of the intestine deteriorates and that similar substances are present in the venous blood of the strangulated loop and therefore are liable to be returned to the circulation on release of the strangulation. The fact that release of a viable segment of intestine does not always result in improvement of the condition of the experimental animal has been previously shown. To determine the factors responsible for the death of the animal, which occasionally occurs under these circumstances, a series of experiments were performed with the following results. In 15 per cent of cases, release of a moderate viable strangulation was followed by death, but only when the animal's general condition had been impaired by toxic absorption prior to the release. In 80 per cent there was evidence of the return of toxic substances to the general circulation, as shown by profound cardiac effects or lowering of blood pressure. When the circulation was in good condition prior to the release, recovery occurred.

The moral for the treatment of a toxic human patient is as follows: 1. It is advisable to remove as much peritoneal fluid as possible without prolonging the operation and handling unduly. 2. Exteriorization or resection of doubtful intestine is safer than return or invagination, owing to the possibility of further absorption.

Experiments were also made to assay the degree to which surgical shock modifies the clinical picture in experimental long loop strangulation—corresponding clinically to mesenteric thrombosis. The rapidly fatal outcome of these cases could not be accounted for solely by absorption of toxic substances which were demonstrated in small amounts in the peritoneal and lymphatic fluids. Fluid loss as a cause of death was also excluded. By oscillographic experiments it was shown that after producing such a lesion there is a great increase in the nerve impulses at the splanchnic area. Death therefore appears to be due, in part at least, to shock, and therefore these cases form a different category from the more usual smaller strangulations.

Gas Masks for Babies

The danger of another great war is never far from the thoughts of Europeans. In this country we hope for the best but prepare for the worst. Thirty million gas masks for civilians are being provided. The problem of masks for babies is offered some difficulty, but government experts are endeavoring to find a standard size in sight of solution. Material must allow for a certain amount of flexibility and it is therefore

that it will not be long before gas masks for infants and children will be economically produced. Government officials have carried out fitting trials at Dr Barnardo's Homes for Children to determine the range of sizes required for respirators in the case of children under school age. There was no difficulty in trying on the masks. The children showed no sign of crying and scampered about after being fitted with respirators. It is expected that as a result of the trials useful evidence will be forthcoming on two points: (1) the earliest age at which a child may be expected to be able to use a respirator, (2) the necessity or otherwise of extra small sizes of respirators in addition to the stock sizes now being manufactured.

Electrical Hearing Aids in a School for the Deaf

Lord Horder inaugurated a special sound installation at the cinema of the Royal School for Deaf and Dumb Children, Margate. Experiments in the use of electrical hearing aids have been carried out during the past three years at the school, which is now the first to be equipped with apparatus that enables a fair proportion of its pupils to distinguish the sounds reproduced in a talking film. A record is made, by means of tests on an audiometer, of the exact amount of hearing loss of each child. It has been found that those who do not have a greater hearing loss than 70 per cent can derive benefit from hearing aids. The sound reproduced with the film is put on to a line through a special device which ensures that it shall not exceed a certain level of volume. The line goes to sockets fixed on the back of each chair, and each child has a small box from which a lead is plugged into the socket. The special 'unmasked hearing' headphones which the child uses ensure that the speech sounds are clearly defined, so that the consonants in particular are easily distinguished. The system of 'unmasked hearing' is regarded as the most important feature of the installation because its use helps in a progressive appreciation of speech sounds.

Lord Horder said that the school made a double appeal to the physician—as a humanitarian and as a scientist. These hearing aids achieved what was a valuable addition to the physical and mental well being of the children of the school.

BERLIN

(From Our Regular Correspondent)

Oct 18, 1937

The Heritability of Rheumatic Diseases and Goiter

Claussen of Frankfurt-on-the-Main recently discussed the heritability of rheumatic disease before the Medical Society of his city. According to the pathergy theory of Roessle and Klinge, rheumatism is a disease of the entire organism, a specific hyperergic reaction which, under other supervening influences, may lead to various types of illness. Genetic research has been able to supplement this important hypothesis by examination of the hereditary constitutional tendency to hyperergic reaction. In a vast majority of cases of articular rheumatism the sensitization comes from tonsillitis, usually of a chronic form. Claussen observed this interrelation in 70 per cent of 234 students affected with mild ailments. Other observers report the same syndrome in 50 per cent of all cases of rheumatism among soldiers on active service. The pathogenesis of tonsillitis is favored by a susceptibility to catarrh which, according to research on twins, appears to be heritable. If the organism once becomes hyperergic sensitizing factors (such as intestinal autoinfection) will be of greater significance in the case of articular rheumatism that tends to recidivate. Allergic disorders of the skin and mucosa are especially frequent in rheumatic patients and their families and are apparently related to rheumatic reactions. In the study of rheumatic patients, all modifications of the mesenchyma are of interest. Flatfoot in all forms is a regularly corresponding defect among enzygotic twins. In dizygotic twins lack of correspondence is as frequent as correspondence. In rheumatic patients flatfoot is nearly

always present. The pedal anomaly often manifested prior to the first attack of rheumatism may later become more prominent. In a pair of enzygotic twins, flatfoot is more pronounced in a rheumatic than in a nonrheumatic twin. A rheumatic diathesis is demonstrable earlier if the disorder runs a recidivating or chronic protracted course, even if only a milder form is manifested. Various types of rheumatism are observed coexistent in the same predisposed family. Differences that may amount to peculiar familial forms within are based on modifying factors of hereditary and nonhereditary nature. As hereditary factors, constitutional and metabolic anomalies may be observed, as exogenous influences (and these are now encountered more often than formerly) nutritional defects and vitamin deficiency.

Few studies of the heritability of exophthalmic goiter have been attempted. Dr W. Lehmann has undertaken research on this problem at the medical clinic of Breslau University. His material consists of twins and of patients' families. Thus far eight pairs of twins have been studied—three pairs of enzygotic twins and five pairs of dizygotic twins of the same sex. Correspondence was noted in two of the three enzygotic pairs with respect to hyperthyreosis whereas in the third pair no such correspondence was demonstrable. Of the dizygotic pairs one showed correspondence with respect to hyperthyreosis but no such correspondence was observed in the remaining three pairs. As the twins had been selected at random it was concluded on the basis of these observations that hereditary predisposition is a pathogenic factor in hyperthyreosis. In addition, a study has been made of the families of those patients who within the last few years were treated for exophthalmic goiter at the Breslau clinic. A vast amount of genealogical data is being collected so that in each case the familial picture will be as complete as possible. Thus far the families of twenty patients have been studied. In eleven of these families no record of other cases of exophthalmic goiter has as yet been found, conversely, in the other nine families investigated, twenty-eight other cases of hyperthyreosis, thyrotoxicosis and fully developed exophthalmic goiter were established. Of these twenty-eight cases, six were cases of fully developed exophthalmic goiter. The twenty-eight persons affected represented various degrees of consanguinity to the Breslau hospital patient. The frequently encountered transitional types of thyroid disorder that precede exophthalmic goiter may be interpreted as incomplete manifestations of the hereditary predisposition. The data elicited thus far suggest a dominant hereditary transmission of the predisposition to exophthalmic goiter. This dominance seems, however, not always to be regular. Lehmann's studies also show thyroid disturbances to be much more frequent in women than in men.

In a discussion of Lehmann's work Prof K. H. Bauer, ordinarius for surgery at Breslau, who for many years has been interested in genetic research, stated that familiar manifestation of thyroid dysfunction is rare and ought not to be overevaluated, the presence of a struma is no indication of a predisposition to exophthalmic goiter and the very existence of such a predisposition is questionable. In any event the operating surgeon seldom encounters more than one case of exophthalmic goiter within the same family.

Sterility in Marriage

The problem of sterility in marriage recently received full discussion in the Hamburg Medical Society. The first speaker, Dr H. Dietel of the Woman's Hospital of Hamburg University (Eppendorf) discussed 'Sterility: Its Cause and Treatment'. A clear definition of the term 'sterility' is necessary if we are to compare the statistics and observations contained in the literature. Dietel emphasizes on the grounds of the relatively brief period of a woman's fertility the necessity of suitable and timely therapy, the commencement of which should not be delayed beyond two years. If on examination the husband is

found capable of procreating, the principal causes of the sterility must be sought in the wife. Diabetes should receive special consideration. Treatment of extragenital disorders or malformations of the genitalia will differ according to the type and severity of the disease in question. Cervical catarrh is frequently a cause of sterility, if the usual methods fail, cervical curettage and scarification are indicated. In cervical stenosis, dilation of the uterine canal frequently leads to favorable results. Although uterine retroflexion may be a cause of sterility in some women, there are just as many women who become pregnant despite the presence of this anomaly. Before a surgical intervention is decided on, the permeability of the tubes should first be tested. With regard to hypoplasia, Dietel emphasizes that there is no uterus so small that a pregnancy cannot take place therein, even if the outlook is relatively bad. In the treatment of hypoplasia, glandular therapy occupies the first place at present. Professor Haselhorst of the Women's Hospital, Hamburg, stated that in his institution 1,000 mouse units of estrogen is administered orally on twenty-one days of each month for three months. If favorable results are not forthcoming, the dosage is increased to from 2,000 to 3,000 mouse units.

In conclusion, Prof. Hans Ritter, dermatologist, discussed "Sterility in the Male." In sexual hypofunction or dysfunction some favorable therapeutic results may be obtained if the condition is detected in time. But if a deficiency is first revealed only in the adult subject and through marriage, it is usually too late to institute an effective therapy. More frequently, however, male sterility results from infectious disease. Next to tuberculosis and syphilis, gonorrhea is the most important. Damage from this source is much more frequent than is commonly supposed, and although the condition may be only transitory it is often permanent. Ritter reports several observations gleaned from his study of the extract of the anterior lobe of the hypophysis. In two cases of sterility based on hypophysial cachexia, the characteristic eczema of this disorder disappeared with amazing rapidity under treatment with the extract. Ritter thereafter utilized the extract regularly in the treatment of chronic eczema and observed also a stimulation of sexual function, as regards both libido and sexual potency, in hundreds of cases so treated.

Accordingly he came to apply the same general therapy to cases of sexual debility and the results were striking. Even in cases of necrospemia the favorable response was amazing. In one case abundant quantities of motile spermatozoa were detected in the semen subsequent to fifty injections of the extract. In the course of one year Ritter was able by this means to restore the procreative capability of ten necrospemic patients. Nor should the progeny of these men be considered inferior, since spermatogenesis had not been affected. This therapy should be regarded as causal. The semen of the ten patients mentioned has remained normal subsequent to the cessation of treatment.

Typhoid Infection from Ice Cream

In the *Zeitschrift für Hygiene*, Dr. Roelcke of the Hygienic Institute in Heidelberg reports an outbreak of twenty-four cases of typhoid in children of a village in Baden. All these children became ill at about the same time, all were affected with diarrhea and vomiting and all complained of headache and abdominal pain. A diagnosis of typhoid was serologically established. The cases were atypical and mild. The period of incubation ranged from seven to twenty days. It was found to be the source of infection. It was found that the ice cream vendor's wife had succumbed to enteric infection at about the same time that the children had chased the ice cream and furthermore that the mother had experienced a mild gastro-enteric attack. This couple must have originated either the infection by the ice cream or by contact.

Prof. Fedor Krause Is Dead

Prof. Fedor Krause, one of the best known German surgeons, is dead at the age of 80. Krause's pioneering improvement of operative procedures won him a worldwide reputation. A pupil of Volkmann at Halle, he quickly rose in his profession. After having served as senior physician in several of the large hospitals he was appointed in 1900 director of the Augusta Hospital, Berlin, a post which he occupied until his retirement in 1921. Krause's reputation depended in addition to his work in bone and joint tuberculosis on his innovations in the surgery of the brain and spinal cord. His great contributions to the literature of the latter field were many times translated into foreign languages, including English. Krause's method of excision of the gasserian ganglion is designated in the literature as "Krause's operation." Krause, the man was a lovable personality and he was an active member of various medical organizations.

Prof. Carl Schleyer Is Dead

Prof. Carl R. Schleyer died in Berlin, aged 61. A pupil of C. Gerhardt, he was especially noted for his work in the field of nervous diseases and for the kidney test which bears his name. As first German internist and as director of the internal medical service of Augusta Hospital, Berlin, Schleyer established a diet kitchen which became a model for similar kitchens throughout Germany.

ITALY

(From Our Regular Correspondent)

Oct. 30, 1937

Dermatologic Meeting

The Società di Dermatologia e Sifilografia met at Messina under the chairmanship of Professor Tommasi, head of the clinic of Palermo, who reported the case of a woman suffering from primary gonococcal arthritis. The husband contracted gonorrhea and three weeks later the wife showed signs of fever and articular rheumatism with the clinical symptoms of gonorrheal arthritis. Examination of the genito-urinary tract were negative for the gonococcus. The speaker said that the case was one of primary gonococcal septicemia by direct entrance of gonococci into the blood and secondary location of the organisms in the joints. The absence of infection of the genitals was due to the fact that the woman took a preventive vaginal douche of potassium permanganate solution, on the advice of her husband.

Professors Monacelli and Fulchignoni of Messina reported the results of studies of tropical ulcer in Africans. In all cases the fusospirillar association was abundant. Fusiform bacilli were found at the surfaces and spirochetes were deeply located. The inoculation in animals gave negative results in all cases. Satisfactory results were obtained from topical applications and parenteral administration of vitamin A. The speakers believe that tropical ulcer originates in avitaminosis.

Professors Bosco and Nicastro of Palermo spoke on the staining of leprosy nodes by methylene blue. In 1934 Mouton reported satisfactory results from the intravenous injections of methylene blue in the treatment of leprosy. Methylene blue is retained by leprosy tissues, but it is not yet clear whether the stain is retained by leprosy bacilli, leprosy cells or reticulo-endothelial cells of the leprosy skin. Leprous erythema and infiltration that cannot be seen at clinical examination of a given leprosy lesion can be seen in the course of the treatment with methylene blue. Tommasi believes that the intravenous injections of methylene blue are of value in the early diagnosis of leprosy rather than in the treatment of the disease. The speakers found by experiments that the leprosy bacillus does not stain with methylene blue. Professor Scala of Messina stated that he administered intravenous injections of methylene blue to eleven lepers, with failure of the treatment.

Tommasi and Varvaro studied the influence of pneumo-inoculation in a normal lung in the evolution of cutaneous tubercles.

Two patients with normal lungs were suffering from elephantiasis of the legs and small lupus lesions on the face. Pneumothorax induced improvement of the local lesion, but the results were not permanent. Further studies are advisable.

Surgical Work in Military Hospitals

At the various military hospitals during 1936 the number of minor operations totaled 11,784, including 3,771 incisions of superficial abscesses and 1,920 reductions of fractures. The major operations totaled 6,511, which included 3,210 on the abdomen, 1,587 on the pelvis and pelvic organs and peritoneum and 902 on the head. The number of major operations is larger than in previous years because of the increased number of soldiers. There were 1,566 operations for hernia, which included 1,472 operations in inguinal or inguinoscrotal hernia, in which eleven cases were of strangulated hernias. In the group of abdominal operations, 1,416 were done in surgical conditions of the appendix. There were made 337 appendectomies with a mortality rate of 6.8 per cent. In the group of pelvic operations, thirty-three were done on the pelvis or pelvic soft parts, eight on the pelvic ureter, the bladder or the prostate, 826 on the rectum and posterior part of the peritoneum and 720 on the anterior part of it. There were 115 operations on the thorax, including sixty-two costal resections in empyema, pyopneumothorax and fistulas, with nine deaths in the group. There were 200 operations in benign tumors of various nature, nine operations for cancer, sixty-four for gastroduodenal ulcer and its complications and twenty-five operations on echinococcal cysts of the lung or the liver.

JAPAN

(From Our Regular Correspondent)

Oct 2, 1937

Physical Training on a National Scale

The present cabinet is pointing out the necessity of higher culture for the nation in general, and the home office is the center of the "cultural movement." During the summer the physical training of the nation was planned and successfully carried out throughout the country, partly because of the trouble with China. As physical training is one of the fundamental objects of the cultural movement, it was carefully planned, on a large scale, and advantage was taken of the twenty days after August 1 when all schools were having summer vacation. Every morning the Tokyo central broadcasting station broadcast gymnastic exercises. All the nation was advised to participate voluntarily for half an hour from 6 in the morning. The drill grounds were generally the primary school grounds, the precincts of shrines and temples, the parks, the seashore and factory courts. For the people, especially office and factory workers, who failed to take part in the morning exercise, thirty minutes after lunch was given over for this purpose. The primary school children were requested to participate in the gymnastics. In the villages at least one member of each family was obliged to take part. At the offices chiefs and clerks were advised to do the exercises, and members of the Japan Young Men's Association and ex-soldiers were summoned to the grounds to assist in controlling and regulating the assemblages. It is estimated that 10,000,000 men and children participated throughout the country. These morning exercises, besides improving the nation's health, must have done much to cultivate a cooperative spirit.

Physical Examination of All Citizens in Osaka

The municipal office of Osaka, a great industrial city with a population of 2,500,000 has drafted a plan for promoting the health of its citizens. This plan will be put into effect by a committee of four sections. The first section will deal with the sanitary surroundings of the city and the health of the laboring people. The second section will instruct housewives concerning nutrition and the care of young children and babies.

The third section will act as adviser to the schools to see that sanitary equipment is provided, and will otherwise aid in promoting the health of school children. The fourth section is to work in the field of preventive medicine. The committee will first promote the physical examination of the citizens of Osaka, this work will be carried on by the twelve health offices which have already been established. Each office will supervise the examination of 60,000 citizens. The reports will include the following information: how many members of the family have died particularly infants; the number of workers in the family; the number who have been dismissed or are out of employment and the causes of dismissal; the lighting, the humidity of the dwelling houses and the workshops and the amount of noise will be reported. Concerning the individual citizen, the examination will inquire into his habits, tastes, occupation, office hours, leisure hours, monthly income, medical history, hours of sleep, cough, sputum, night-sweats, fatigue, tendency to catch cold, stomach complaints and the price and ingredients of his lunch. Moreover, the general physical examination will include a report on height, weight and chest expansion. When tuberculosis is suspected the subject will be summoned to the office for x-ray examination. Such an elaborate examination has never been done in any place in this country. A few years ago, the government at Osaka tried to accomplish something of this kind by distributing report cards to be filled in and returned voluntarily, but the plan was a failure for various reasons. Now the authorities have decided to have the doctor call at each house and render a report, and every police station will assist in carrying out the plan.

In conjunction with this movement, the authorities will establish a Women's Health Association, which will use the various health offices as centers of activity. This association will teach household sanitation and similar subjects, such as how to render first aid in emergencies and how to determine the quality of drinking water, to housewives. Women are being trained to be the regular guards of their homes against enemy's planes during air raids, as the men will be away from home. They will be given lectures on poison gases and on how to deal with the gas from aerial bombs. The central training places will be the health office, infants' homes and maternity hospitals in each district.

Dr. Mita Appointed President of University

The appointment of Prof. Dr. S. Mita as president of the Formosan Imperial University was announced September 1. He has been dean of the medical college of the university. Of the eight presidents of governmental universities in this country, three are medical men, excluding one who recently resigned. This fact shows that medical men are highly regarded in the academic world here. However, a great statesman who has been a physician cannot be found; the physician is evidently inclined to refuse to wander into a political broad.

The Japan Research Institute of Industry and Labor

The Japan Research Institute of Industry and Labor, supported by the Japan Science Association, has decided to equip various buildings for its research work in Tokyo at a cost of 1,102,000 yen. The institute has laboratories, a library, a museum of industry and labor, a school of industry and labor and assembly halls. There will also be laboratories for study of the prevention of occupational diseases. Equipment will be provided for the study of both the physical and the spiritual conditions necessary for efficiency in labor. However much industry is mechanized, it will be impossible to cease employing human muscular labor, furthermore human muscles will be required to work more speedily and to be more delicate and enduring. In these laboratories the training of muscles along these lines is to be the subject of research. An instrument is to be furnished to investigate the various phases of biologic

electricity which accompany muscular exertion. In the laboratory for investigating fatigue, the chief studies will relate to nerve control. The rehabilitation of the disabled and the deformed will be undertaken by the most modern methods. The cost of living and the wages paid for labor are to be subjects of an investigation. Factory sanitation and the development of the laborers' physique will be thoroughly studied. The chief of the institute will be Dr. Y. Teruoka, formerly chief of the Kurashiki Labor Research Institute and now adviser to the central government on labor problems.

Subcutaneous Vaccination Remains Unapproved

The subcutaneous vaccination introduced by Dr. Yaoi of the Infectious Disease Research Institute is meeting great favor among mothers, for it leaves no scars on the arms, which many girls like to keep bare. Some practitioners, by advertising this method, overrate its convenience. There arose some trouble about the vaccination certificate, and so the sanitary department of the metropolitan police board has announced that subcutaneous vaccination is still of doubtful effect. The home office therefore has no intention of approving this method as trustworthy at present. Vaccination must be certified only after the usual cutaneous vaccination has been successful.

BELGIUM

(From Our Regular Correspondent)

Oct. 11, 1937

Physical Education in the Schools

The Societe Medicale Belge d'Education Physique et de Sports investigated the situation in the schools with respect to the physical education of children who exhibit physical or mental abnormality. The society proposed to make certain recommendations with respect to school children whose condition bordered on the pathologic. The investigating committees met from time to time under the joint chairmanship of Professor de Munter of the University of Liege and Dr. J. De Vaucleeroy, chief medical officer of Brussels schools.

The report of the committees was discussed by the society at two of its general assemblies and the following conclusions were adopted:

1 The rehabilitation of physically subnormal children has been the function of the special colony, the preventorium, and so on. The school medical officer has merely to designate the children in question and observe their reactions. The application of suitable corrective measures should be confided under medical supervision, to the teacher, the nurse, the dietitian, the monitress and the instructor in physical education.

2 A school should devote itself to a program of physical education suitable for all its pupils. The school doctor should indicate to the teacher those children who present physical anomalies and should furnish the parents useful information and advice so that these children may receive proper care. The school physician should not undertake medical treatment of the children.

3 After the schools have adopted well organized programs of physical education for all the pupil population, special classes in corrective gymnastics will be organized in the larger centers. The instructor of a special class will be a graduate in physical education and its membership will be selected according to the recommendations of the school medical officer who in addition will divide the pupils into various groups and point out the requisite measures. The pupils in the special class will be of all be differentiated on the basis of respiratory, circulatory and vertebral defects. Pathologic cases will be referred to an orthopedist.

4 A graduate instructor in physical education is a dispensable member of the staff of any educational institution. Mentally abnormal children if the optimal mental development is to be assured.

Occupational Diseases Among Workers in the Chromates

Uytendoeff addressed the Society of Industrial Medicine on the prevalence of occupational disorders in such chemical industries as tanning and chromium plating. He has especially investigated conditions among workers in the chromates which are prepared from the chromite ore. The toxicity of different products varies but that of the alkaline chromates and the bichromates is considerable. The last named substances may underlie several types of dermatitis, ulcerations and disturbances of the upper respiratory organs such as rhinitis and perforation of the nasal septum. Other frequent manifestations among the workers are conjunctivitis and ulcerous lesions of the buccal cavity, the tonsils and the pharynx. Generalized intoxication seems to be exceptional. The lesions are caused by the dusts, vapors and various products given off in the course of the manufacturing process.

Although prophylaxis has been introduced, it is largely ineffectual owing to the negligence of the workers themselves. All are affected with rhinitis, a majority with perforation of the nasal septum and some with dermatitis of the legs and forearms. Many workers present hollow cicatrices produced by chromium. The author envisages a prophylaxis compatible with the exigencies of the work. Helpful protective measures would be the use of closed vessels for certain chemical procedures, adequate ventilation of work rooms, installation of showerbaths and locker rooms, and the wearing of masks and rubber gloves. Careful selection of workers hired, periodic physical examinations of workers and their proper instruction in the prophylactic routine should be considered fundamental.

International Committee to Combat Charlatanism

The International Committee to Combat Charlatanism met recently in Brussels. The first theme, introduced by Dr. Brandligt, was "Quackery in Neighboring Countries." The speaker reminded his audience that the "big time" quacks are cosmopolites, always on the move, so it is useless to designate them as of this or that nationality. Dr. Boëlle spoke of conditions in France.

The second topic, "Midwives and Practical Nurses," was discussed by Dr. Boëlle with special reference to present legal regulation of midwives in France. Dr. Gildemyn discussed the problem of practical nurses and the reason why no action has thus far been taken to curb the illegal practices of these women. Dr. Gildemyn submitted a paper on physicians who permit their names to be used in connection with nefarious enterprises. This problem is rendered particularly distressing by the fact that the doctor who acts merely as straw man for an illegal enterprise is difficult to prosecute on this ground alone. Dr. Boëlle and Dr. d'Ernst described the existing laws of their respective countries.

Marriages

AUSTIN J. BROGAN, Eastport, Maine, to Miss Mary Edmiston of Bellwood, Pa., in Germantown, Pa., July 10.

WILLIAM KITCHIN McDOWELL, Scotland Neck, N. C., to Miss Frances Morton of Greenville, October 27.

ANDREW DU VAL TAYLOR, Charlotte, N. C., to Miss Anne Jessup O'Sullivan of Hertford, June 5.

PAUL M. RICE, Chicago, to Miss Mary M. Gardner of Baltimore, May 12, at Santa Fe, N. M.

WILLIAM A. SNOODGRASS JR. to Miss Mary Jane Moseley of Warren, Ark., Aug. 7.

CHARLES M. STARR, Larned, Kan., to Miss Helen Burbank of Los Angeles, September 19.

JOHN M. USOW, Milwaukee, to Miss Ella Mae Goodman of Norfolk, Va., October 10.

WILLIAM B. WILD to Miss Priscilla Mary Barry both of Ireland, November 12.

Deaths

John Laidlaw Buel, Litchfield, Conn., College of Physicians and Surgeons Medical Department of Columbia College New York, 1888, member of the Connecticut State Medical Society, chairman of the board of education formerly member of the state legislature, on the staffs of the Spring Hill Sanitarium Winsted and the Charlotte Hungerford Hospital Torrington, aged 75 died September 1 in the Sharon (Conn.) Hospital, of arteriosclerosis, hypertrophy of the prostate and bronchopneumonia

Charles Benjamin Noecker ☉ Chinchilla, Pa., University of Pennsylvania Department of Medicine, Philadelphia 1902, fellow of the American College of Surgeons, formerly surgeon to the Scranton (Pa.) State Hospital consulting surgeon to the West Side Hospital and Mercy Hospital, Scranton Mid-Valley Hospital, Peckville, and St Joseph's Hospital Carbon-dale, aged 63, died, September 14, of multiple sclerosis and acute dilatation of the heart

Arthur David Haverstock, Seward Alaska Medical Department of Hamline University, Minneapolis 1909, past president of the Alaska Territorial Medical Association, at one time captain in the M. C. U. S. Army and acting assistant surgeon in the U. S. Public Health Service, member of the board of medical examiners, on the staff of the Seward General Hospital, aged 53, died, September 10 in Monrovia Calif, of tuberculosis

Joseph Samenfeld ☉ Brooklyn University and Bellevue Hospital Medical College New York, 1904, fellow of the American College of Physicians, attending physician to the Greenpoint and St Catherine's hospitals adjunct attending physician to the Jewish Hospital, consulting physician to the Williamsburgh Maternity and Lutheran hospitals aged 60, died September 5, in Germany, of heart disease while touring

Robert Morgan Entwisle ☉ Pittsburgh, University of Pennsylvania School of Medicine, Philadelphia 1914 instructor in surgery, University of Pittsburgh School of Medicine, fellow of the American College of Surgeons, on the staffs of St Francis Hospital, St Michael's Hospital, St Margaret Memorial Hospital, Presbyterian Hospital and the Children's Hospital aged 50, died, September 20, in Cleveland of coronary sclerosis

Rae Shepard Dorsett ☉ Philadelphia University of Pennsylvania Department of Medicine, Philadelphia, 1900, formerly associate professor of medicine, Temple University School of Medicine Philadelphia, for three years assistant demonstrator of anatomy at his alma mater, attending physician to the Garretson Hospital, served during the World War, aged 62, died, September 28 of heart disease and diabetes mellitus

Cyril James Larkin, Chicago University of Illinois College of Medicine, Chicago, 1915, member of the Illinois State Medical Society, assistant clinical professor of surgery, Loyola University School of Medicine fellow of the American College of Surgeons, on the staff of the Mercy Hospital, aged 45 died September 3 at St Agnes Hospital Fond Du Lac Wis, of injuries received in an automobile accident

William Lee Secor ☉ Kerrville, Texas, Jefferson Medical College of Philadelphia, 1906 fellow of the American College of Surgeons served during the World War at one time professor of experimental physiology and physiologic chemistry at the American College of Medicine and Surgery Chicago chief of staff of the Kerrville Clinic and Secor Hospital aged 58 died September 26, of cerebral hemorrhage

Augustus Bruce Bailey, Portland Ore Willamette University Medical Department Salem 1904 member of the Oregon State Medical Society member of the Pacific Coast Otolaryngological Society fellow of the American College of Surgeons formerly mayor of Hillsboro on the staff of the Good Samaritan Hospital aged 63, died, September 12, of cirrhosis of the liver

Theodore Albinus Coffelt, Powersite Mo., Missouri Medical College St Louis, 1886 member of the Missouri State Medical Association member of the American Academy of Ophthalmology and Otolaryngology president of the Taney County Medical Society formerly on the staff of the Springfield (Mo.) Hospital aged 82, died September 6 of cerebral hemorrhage

Charles Eldridge Stevenson, Sheridan Wyo Omaha (Neb.) Medical College 1895 past president of Wyoming State Board of Medical Examiners and of the Sheridan County Medical Society formerly health officer and coroner aged 74 died September 12 in the Sheridan County Memorial Hospital of cerebral hemorrhage and pneumonia

Jeremiah Barrett Sullivan, New Haven, Conn., Yale University School of Medicine, New Haven 1906, member of the Connecticut State Medical Society, fellow of the American College of Surgeons, served during the World War, attending surgeon to St Raphael's Hospital, aged 57, died, September 1, of uremia and tumor of the kidney

Charles W. Tucker, Drakes Branch, Va., Medical College of Virginia Richmond, 1903, member of the Medical Society of Virginia chairman of the county board of supervisors, secretary of the county board of health, on the staff of the Southside Hospital, Farmville, aged 60, died, September 12, of hypertension and arteriosclerosis

Maria Emma Drew, Quincy Mass College of Physicians and Surgeons, Boston, 1894, Tufts College Medical School, Boston, 1895, member of the Massachusetts Medical Society, at one time school physician formerly on the staff of the Quincy City Hospital, aged 67, died, September 12, of carcinoma of the small intestine

Quintus Colton Fuller ☉ Milford, Iowa, Drake University Medical Department, Des Moines, 1892, for many years member of the board of education, fellow of the American College of Surgeons, superintendent and owner of the Milford Hospital, aged 70, was killed September 24, in an automobile accident near Sioux Rapids

John Andrew Dodd ☉ Marion Ohio, Western Reserve University School of Medicine, Cleveland, 1913, served during the World War, past president of the Marion Academy of Medicine, formerly on the staff of the Marion City Hospital, aged 55, died, September 9, in Cleveland, of carcinoma of the sigmoid

Melvin George Preston ☉ Utica, N. Y., Cornell University Medical College, New York, 1925, member of the Associated Anesthetists of the United States and Canada, on the staff of St Luke's Hospital aged 36, died, September 1, in the Manhattan General Hospital, New York, following an operation for hernia

Henry Grady Atherton, Jasper, Ga., Atlanta Medical College, 1915, member of the Medical Association of Georgia mayor of Jasper for many years member of the city council chairman of the board of trustees of the Pickens County High School, aged 47, died, September 4, of congestive heart disease

John Elijah Loveland, Middletown, Conn., Harvard University Medical School, Boston, 1893, member of the Connecticut State Medical Society, fellow of the American College of Surgeons on the staff of the Middlesex Hospital, aged 72, died, September 12, of cerebral hemorrhage

Henry La Motte ☉ P. A. S., Lieut Commander, U. S. Navy, retired, La Mesa, Calif University of Pennsylvania Department of Medicine Philadelphia, 1889, entered the navy in 1892 and retired in 1897 served during the Spanish-American and World wars aged 70, died, September 4

Haydn Lyle Fischer, Ottawa Ill., Northwestern University Medical School, Chicago, 1909, member of the Illinois State Medical Society, served during the World War, past president of the Henry County Medical Society, aged 53, died suddenly, September 4, of angina pectoris

Clifton Z. Robbins, Bloomsburg Pa., University of Pennsylvania Department of Medicine, Philadelphia, 1895 member of the Medical Society of the State of Pennsylvania, past president of the Columbia County Medical Society, aged 64, died, September 27, of myocarditis

Arthur Groman Noehren, Allahabad, India, University of Virginia Department of Medicine, Charlottesville, 1922, a medical missionary, formerly college physician to the Williams College, Williamstown, Mass, aged 52, died suddenly, September 15, of heart disease

Robert William Sayre ☉ Point Pleasant, W. Va., National University of Arts and Sciences Medical Department, St Louis, 1915, president of the county school board, and county health officer served during the World War, aged 43, died, September 18 of hypertension

Maurice Hopkins Maxwell, Keosauqua, W. Va., George Washington University School of Medicine Washington D. C., 1908, member of the West Virginia State Medical Association aged 53 on the staff of the Potomac Valley Hospital, where he died September 7

Floyd Hamilton Randall ☉ Van Wert Ohio, University of Michigan Department of Medicine and Surgery, Ann Arbor, 1899, member of the West Virginia State Medical Association served during the World War aged 62 died September 16 of diabetes mellitus

George Kendall Heidler, Cleveland Heights, Ohio, Western Reserve University Medical Department, Cleveland, 1898, member of the Ohio State Medical Association, aged 70, died, August 26, of arteriosclerosis, cerebral hemorrhage and hypertension

Amos D Bates, Camp Point, Ill., Chicago Medical College, 1882, member of the Illinois State Medical Society, aged 82, died, September 6, at St Margaret's Hospital, Spring Valley, of hypostatic pneumonia as a result of a fall and fracture of the right leg

Bert Chamberlain Kern Ⓢ Jackson, Calif., Washington University School of Medicine, St Louis, 1905, formerly on the staff of the Preston School of Industry, Waterman, aged 56, died, September 5, in the Sutter Hospital, Sacramento, of heart disease

Adelaide Dutcher Ⓢ Syracuse, N. Y., Johns Hopkins University School of Medicine, Baltimore, 1901, aged 63 for many years on the staff of the Syracuse Memorial Hospital, where she died, September 11, of carcinoma of the breast and abdominal organs

Harry Lee Alexander, McKenzie, Tenn., University of the South Medical Department, Seawanee, 1901, member of the Tennessee State Medical Association, served during the World War, aged 61, died suddenly, September 7, of heart disease

William Chalmers Wills, Victoria, Va., University of Virginia Department of Medicine, Charlottesville, 1930, member of the Medical Society of Virginia, aged 35, died in August, in the Tucker Sanatorium, Richmond, of septicemia

Max Kahn Ⓢ Baltimore, College of Physicians and Surgeons, Baltimore, 1905, member of the Radiological Society of North America, on the staff of the Bon Secours Hospital, aged 54, died, September 23, of coronary thrombosis

Wilmer Ridgway Batt, Spring House, Pa., University of Pennsylvania Department of Medicine, Philadelphia, 1884, formerly registrar of vital statistics for the state department of health, aged 76, died, September 13, of myocarditis

William Hewstone Raymenton, San Diego, Calif., College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1873, aged 85, died, September 11, of cerebral hemorrhage and arteriosclerosis

Willard Lyman Wright Ⓢ Boston, Tufts College Medical School, Boston, 1915, served during the World War member of the American Urological Association, instructor in urology at his alma mater, aged 48, died, August 18

John W Sarpolis Ⓢ Glenlyon, Pa., Loyola University School of Medicine, Chicago, 1919, on the staff of the Nanticoke (Pa.) State Hospital, aged 41, died suddenly, September 16, of paraldehyde poisoning, self administered

George Carson Hanna Ⓢ Philadelphia, Medico-Chirurgical College of Philadelphia, 1895, fellow of the American College of Surgeons, chief of obstetrics, Frankford Hospital, aged 66, died, September 13, of cerebral hemorrhage

John Nisbet Gunn, Calgary, Alta., Canada University of Toronto Faculty of Medicine, 1902 M.R.C.S. England and L.R.C.P. London, 1903, fellow of the American College of Surgeons, aged 58, died, August 26

George Hicks Martindale, Hope, Ark., Chattanooga (Tenn.) Medical College, 1899 past president of the Hempstead County Medical Society, county health officer, aged 70 died September 9, of bronchopneumonia

Frederick Sumner Selby Ⓢ Chicago, Rush Medical College, Chicago, 1893, aged 65, on the staff of the Garfield Hospital, where he died, September 27, of empyema of the gall bladder and chronic myocarditis

Irwin Henry Schmidt Ⓢ Faulkton, S. D., St. Louis University School of Medicine, 1916 served during the World War, on the staff of the Faulk County Hospital, aged 45 died September 1, of brain tumor

Otmar Thurlimann, Harvey, Ill., Rush Medical College, Chicago, 1925, member of the Illinois State Medical Society, aged 37, died, September 14, in a hospital at Duluth, Minn., of streptococcal meningitis

Charles Thomas Martin, Brownsville, Tenn., University of Nashville (Tenn.) Medical Department, 1897, died, September 7, in a hospital at Nashville, of carcinoma of the prostate

Edwin Francis Hagedorn, Modest, Cal., University of California Medical College, 1908, member of the California Medical Association, aged 52, died, September 7, of dilatation of the heart

Archer Avery, Atlanta, Ga., Southern Medical College, Atlanta, 1880, member of the Medical Association of Georgia, Confederate veteran, aged 90, died, September 12, of arterial vascular disease

Robert S Lynd, Philadelphia, University of Pennsylvania Department of Medicine, Philadelphia, 1884, aged 81, died, September 11, in the Presbyterian Hospital, of intestinal obstruction

Joseph Hart Hiden Ⓢ Pungoteague, Va., Medical College of Virginia, Richmond, 1897, formerly a minister served during the World War, aged 71, died, September 10, of coronary occlusion

Leroy Worth Baxter Ⓢ Joplin, Mo., Rush Medical College, Chicago, 1906, aged 56, on the staffs of St. John's Hospital and the Freeman Hospital, where he died, September 2, of coronary occlusion

Paul Preston Oliver, Shawnee, Okla. (licensed in Texas under the Act of 1907), also a pharmacist and a minister, aged 57, died, September 2, at Mayhill, N. M., of coronary thrombosis

Edwin M Easley, Bacons Castle, Va., Medical College of Virginia, Richmond, 1900 member of the Medical Society of Virginia, aged 62, died, September 15, in an automobile accident

Humphrey John Falvey, Worcester, Mass., Baltimore Medical College, 1901, served during the World War, aged 62 died suddenly, September 4, of carcinoma of the prostate

Alfred Joseph Giguere Ⓢ Lowell, Mass., University of Vermont College of Medicine, Burlington, 1907, aged 62, died, September 2, of diabetes mellitus and coronary thrombosis

William Robert Talbot, Newcastle, Neb., Sioux City (Iowa) College of Medicine, 1893, aged 72, died, September 4, in a hospital at Omaha, of acute lymphatic leukemia

Herbert J Baldwin Ⓢ Philadelphia, Jefferson Medical College of Philadelphia, 1908, aged 52, died, September 14 in the Lankenau Hospital, of pulmonary edema

William Allen Evans, Lakewood, Ohio, Jefferson Medical College of Philadelphia, 1906, aged 63 died, September 16, of angina pectoris and coronary thrombosis

Timothy Joseph Daly, Lawrence, Mass., Harvard University Medical School, Boston, 1897, aged 64, died suddenly, September 6, of cerebral hemorrhage

James A D Hite, Nashville, Tenn. (licensed in Tennessee in 1891), aged 67, died, September 4, of pneumonia, chronic nephritis and cirrhosis of the liver

William Clovis Cummings, Oklahoma City, Chicago College of Medicine and Surgery, 1909, aged 55, died, September 5 in a local hospital, of heart disease

Thomas E Thames, Montgomery, La., Memphis (Tenn.) Hospital Medical College, 1911, aged 55, died, September 2 at Pineville, of cerebral hemorrhage

Walter Jordan Jackson, Baltimore, Howard University College of Medicine, Washington, D. C. 1913, aged 47, died, September 11, of myocarditis

William R Dale, Sumner, Ill., University of Louisville (Ky.) Medical Department, 1877, aged 83, died, September 22 of coronary thrombosis

Jamison Vawter, Arkansas City, Kan., University of Louisville (Ky.) Medical Department, 1878, aged 80 died in August at the Mercy Hospital

Archibald Jameson, Arnprior, Ont., Canada, Queen's University Faculty of Medicine, Kingston, 1886, L.S.A., London, 1887, died, August 19

Leon Clarke Robertson, San Diego, Calif., Rush Medical College, Chicago, 1887, aged 73, died, September 26 of duodenal ulcer and hemorrhage

Herbert Abraham Robinson, Kenosha, Wis., Rush Medical College, Chicago, 1889, aged 73, died, September 17 of coronary thrombosis

Robert Lee Snow, Biloxi, Miss., Hahnemann Medical College and Hospital, Chicago, 1892, aged 72, died, August 1 of angina pectoris

Charles Oliver Hart, Pittsfield, N. H. (licensed in Massachusetts under the Act of 1895), aged 78, died, August 1

Daniel M Sanders, Chilhowie, Va., Medical College of Virginia, Richmond, 1899, aged 65 died, September 12

Thomas J Tenney, Detroit, Detroit College of Medicine, 1907, aged 52, died, September 9, of heart disease

Bureau of Investigation

MISBRANDED "PATENT MEDICINES"

Abstracts of Notices of Judgment Issued by the Food and Drug Administration of the United States Department of Agriculture

[EDITORIAL NOTE The abstracts that follow are given in the briefest possible form (1) the name of the product, (2) the name of the manufacturer, shipper or consigner, (3) the composition, (4) the type of nostrum (5) the reason for the charge of misbranding, and (6) the date of issuance of the Notice of Judgment—which may be considerably later than the date of the seizure of the product.]

McLeans (Dr J H) Universal Liver Pills—Dr J H McLean Medicine Co, St Louis Composition Extracts of plant drugs including a laxative Fraudulent therapeutic claims—[N J 25098 July 1936]

Chamberlain's Salve—Chamberlain Medicine Co Des Moines Composition Essentially ammoniated mercury in a petrolatum and paraffin base For eczema salt rheum piles etc Fraudulent therapeutic claims—[N J 25098 July 1936]

Hobsons (Dr) Whooping Cough Syrup—Pfeiffer Chemical Co New York and St Louis Composition Essentially ammonium chloride chloroform (1.02 mms per fluid ounce) and a compound of antimony with pine tar sugar and water Fraudulent therapeutic claims—[N J 25098 July 1936]

Candy Worm Expeller—Furst McNess Co and Furst & Thomas Freeport Ill Composition Essentially pink compressed tablets each containing chiefly sugars about 0.4 grain of syntonin and a small amount of coloring matter Fraudulent therapeutic claims—[N J 25101 July 1936]

Powers Asthma Relief—E C Powers Co Boston Composition Essentially saltpeter and plant material including stramonium Fraudulent therapeutic claims—[N J 25102 July 1936]

Roo Mo Rub—Roo-Mo-Rub Corp Philadelphia Composition Essentially alcohol (80 per cent) water and a small proportion of wintergreen oil For rheumatism swollen glands and joints erysipelas boils scarlet fever etc Fraudulent therapeutic claims—[N J 25103 July 1936]

Red Fire Ointment—Harwell Co Chicago Composition Essentially salicylic acid (14.26 per cent) and volatile oils including menthol and wintergreen in a fatty base For various types of rheumatism Fraudulent therapeutic claims—[N J 25107 July 1936]

Ehrlich's (Dr) Nerve Tonic and Sedative—Dr Ehrlich's Laboratory Cleveland Composition A watery solution containing phenobarbital and bromides of sodium and ammonium Misbranded because labeled to contain no habit forming drugs and because of fraudulent therapeutic claims—[V J 25112 July 1936]

Ehrlich's (Dr) Tonic and Blood Purifier—Dr Ehrlich's Laboratory Cleveland Composition Essentially methenamine an iron compound potassium iodide extracts of plant drugs sugar and water Fraudulently represented as a remedy for rheumatism neuritis blood and nerve disorders etc—[N J 25112 July 1936]

Ehrlich's (Dr) Kidney and Bladder Medicine—Dr Ehrlich's Laboratory Cleveland Composition Essentially methenamine (0.36 grams per 100 milliliters) extracts of laxative plant drugs a small proportion of an iron compound and water Fraudulent therapeutic claims—[N J 25112 July 1936]

Nature's Vital Food—Charles J Roode North Stonington Conn Composition Essentially ground plant material extracts of plant drugs including rhubarb sarsaparilla podophyllum mullein and senna with water and salicylic acid (0.1 per cent) Fraudulently represented as a remedy for impure blood and a prevention of cancers tumors syphilis etc—[N J 25116 July 1936]

Oceanic Vitex—Neu Life Laboratories Sacramento Calif Composition Essentially seaweed Fraudulently represented as a nerve and gland food and a remedy for rheumatism kidney and blood disorders goiter asthma etc—[N J 25117 July 1936]

Udga Tablets—Udga Inc St Paul Minn Composition Approximately 9 grains each of baking soda and bismuth subnitrate and 8 grains of magnesium oxide per tablet Fraudulently represented as a remedy for acidosis chronic gastritis indigestion stomach ulcers etc—[N J 25118 July 1936]

Athollin—Hilliard Products Co Inc Wilmington Del Composition Essentially boric benzoic and salicylic acids aluminum chloride alcohol (72.7 per cent by volume) water and perfume For skin disorders such as pimples acne and eczema Fraudulent therapeutic claims—[N J 25119 July 1936]

Glo More Shampoo—Gilmore Burke Inc Seattle Composition Essentially soap a trace of alcohol water and an unnamed agent which rendered it antiseptic when diluted with one volume of water but which failed to render it anti-epic when diluted with nine volumes of water Fraudulently represented as to its alleged healing and antiseptic qualities—[N J 25121 July 1936]

Stollgal—Sto-Li Gal Co St Paul Minn Composition White tablets containing baking soda (0.46 gram) bismuth subnitrate (0.31 gram) calcium carbonate (0.15 gram) calcium phosphate (0.14 gram) and magnesium oxide (0.28 gram) and menthol flavoring in each pink tablet, calcium carbonates phenolphthalein and extractive material including a resin For high blood pressure debility stomach disorders including ulcers etc Fraudulent therapeutic claims—[V J 25124 July 1936]

Quan Da Sae—Seebasco Laboratories Inc Philadelphia Composition Essentially a volatile oil such as camphor oil (16 per cent) and a small proportion of a phenolic substance in petrolatum Fraudulently represented as a remedy for various types of inflammation—[N J 25125 July 1936]

Hem O Rem—Seebasco Laboratories Inc Philadelphia Composition Extracts of plant drugs including a resin and a trace of an alkaloid with alcohol (62.7 per cent) and water Fraudulently represented as an effective internal remedy for hemorrhoids—[N J 25125 July 1936]

Laxated H L C—Durham Drug Co Ittadena Miss Composition Essentially water calcium iron epsom salt sodium benzoate and plant extracts For stomach kidney and bladder disorders etc Fraudulent therapeutic claims—[N J 25129 August 1936]

Armstrong's Sore Throat and Quinsy Drops—Nelson Baker & Co Detroit Composition Essentially water alcohol acetic acid and extracts of plant drugs including red pepper and bloodroot Fraudulent therapeutic claims—[N J 25132 August 1936]

Holford's Inhaler—William J Fink trading as the Holford Co Minneapolis Composition Essentially plant material including lavender flowers mustard seeds and mustard oil For catarrh hay fever asthma sinus trouble etc Fraudulent therapeutic claims—[N J 25134 August 1936]

Ben Arid's Desert Remedy—Mountain & Desert Products Co Denver Composition A dried and cut plant of a species of Ephedra For asthma indigestion insomnia neuritis kidney and bladder disorders rheumatism high blood pressure etc Fraudulent therapeutic claims—[N J 25135 August 1936]

Risal Liquor Cresolls Compound—Teres and Solomon Turk trading as Turk Drug Co Philadelphia Composition A small proportion of a potassium compound less than 5 per cent of a fatty anhydride about 5 per cent of tar acids a small proportion of glycerin and water For feminine hygiene and athlete's foot Not antiseptic False and misleading therapeutic claims—[N J 25177 August 1936]

Nu Vigor Tablets—C H Williams trading as the Pier Co New York Composition Compounds of iron manganese and quinine with traces of sulfates and phosphates For nervousness debility neurasthenia impotence prostatic disorders etc Fraudulent therapeutic claims—[N J 25136 August 1936]

Femilene Antiseptic Tablets—Morris Products Co Urbana Ohio Composition Essentially sugar of milk tartaric acid and baking soda Not antiseptic Fraudulent therapeutic claims—[N J 25135 August 1936]

Sumner's Lung Salve—Dr J B Sumner & Son Provo and Orem Utah Composition Essentially eucalyptus oil and petrolatum For croup pneumonia and all throat and lung diseases Fraudulent therapeutic claims—[N J 25139 August 1936]

Preelson Pills—Laboratories Inc and Dewey W Miles Joplin Mo Composition Magnesium carbonate potassium nitrate and plant material including bearberry and buchu with sugar and chalk coating For kidney and bladder disorders Fraudulent therapeutic claims—[N J 25148 August 1936]

Dalley's Pain Extractor—Dalley Mfg Co Bayonne N J Composition Essentially a bismuth compound and camphor in an ointment base For hemorrhoids ulcers boils rheumatism erysipelas etc Fraudulent therapeutic claims—[N J 25140 August 1936]

Oil de Vita—Vita Laboratories Philadelphia Composition Essentially peppermint oil For destroying cold and catarrhal pus bacilli Fraudulent therapeutic claims—[N J 25144 August 1936]

American Desert Tea—American Desert Tea Co Hollywood Calif Composition A species of Ephedra For stomach kidney and bladder disorders insomnia rheumatism impure blood etc Fraudulent therapeutic claims—[N J 25141 August 1936]

Universal Pain Expeller—Chicago Drug Sales Co Chicago Composition Essentially ammonia a pungent principle such as red pepper a small proportion of a volatile oil and water For rheumatism neuralgia colds etc Fraudulent therapeutic claims—[N J 25143 August 1936]

Universal Brand Liniment—Chicago Drug Sales Co Chicago Composition Essentially an ammonium soap and volatile oils including camphor with alcohol and water colored green Fraudulent therapeutic claims—[V J 25143 August 1936]

Vita Pine Bathol—Vita Laboratories Philadelphia Composition Essentially soap and water perfumed with pine needle oil and colored For rheumatic conditions etc Fraudulent therapeutic claims—[N J 25144 August 1936]

Precision Rheumatic Relief Tablets—Laboratories Inc and Dewey W Miles Joplin Mo Composition Aspirin (5 grains per tablet) and plant material including calcichum Fraudulent therapeutic claims—[N J 25148 August 1936]

Correspondence

DANGEROUS PROMOTION BY DETAIL MEN

To the Editor—It seems to me that this sulfanilamide episode has afforded an opportunity to warn some of our better drug manufacturing companies against their high powered salesmanship to druggists and doctors. For example, various druggists have been informed that sulfanilamide is the proper treatment for acute gonorrhea. Consequently, in both towns and cities, sulfanilamide is being sold over the counter to the layman. Another example is the recommendation of Lilly's oval vaccines, such as Entoral, to their druggists. As a result, druggists have been carrying advertisements in the newspaper such as in this town—"Why take cold shots when you can take cold capsules?"

The same semisecret purpose in the production of drug products that prompted the production of Elivar of Sulfanilamide-Massengill has introduced a spirit of commercialism among drug manufacturing companies that is most harmful. This commercialism is well shown in the various unscientific names applied to drug products in an attempt to divert the attention of the doctor from their actual chemical content. I, as a practitioner in a small town, am familiar with the high powered salesmanship and unscientific presentation of facts by most drug salesmen, even from our bigger companies.

A. B. RICHTER, M.D., Flora, Ind.

DISTRIBUTION OF ANTIPNEUMOCOCCUS SERUM IN MASSACHUSETTS

To the Editor—In THE JOURNAL, October 23, there is published a report of the Committee on Public Health Relations of the New York Academy of Medicine, on Community Provision for the Serum Treatment of Pneumococcal Pneumonias.

In the paragraph on page 1326 describing the procedure for general distribution of antipneumococcus serum in Massachusetts, it states that no serum is given until the laboratory report indicates that the patient for whom it is requested is suffering from type I or type II infection and that only for patients who have been ill for not more than four days.

That was our practice up to March 1937, when the restriction as to the day of disease on which treatment with serum could be begun was withdrawn.

We have also made type V serum available on the same basis.

HENRY D. CHADWICK, M.D., Boston
Commissioner of Public Health,
Commonwealth of Massachusetts

SUPPURATIVE PERICARDITIS AND ITS SURGICAL DRAINAGE

To the Editor—In a recent article (Shuplev, A. M. Pericarditis, THE JOURNAL, September 25, p. 1017) the author states that "in late cases with a large effusion anterior drainage may not be effective" and that Truesdale, Heuer, Loucks, Moore and I have reported a 'posterolateral approach' as far as the pericardium is concerned, by resection of the seventh rib near the mediastinal line."

It is true that I discussed this approach in a paper before the Western Surgical Association December 1933, and to condemn it. I said that in the largest effusions fluid could be readily reached in this manner, but in the prompt expansion of the lung would require a large incision while in the smaller effusions such as in acute Pericarditis. Description of a posterolateral approach

Was Made Through a New Approach, *West J Surg* 41, [Feb.] 1933, abstr. THE JOURNAL, Jan. 28, 1933, p. 28, and June 10, 1933, p. 1896.

The "new approach" which I advocated in that paper and have used with good result is one made by removal of a section of the right fifth costal cartilage close to the sternum. A piece of fenestrated flexible rubber tubing of fairly large caliber is then passed through an opening in the pericardium, between the heart and the pericardial wall, obliquely upward and to the left posteriorly, effectively reaching and draining the oblique sinus, where in the fatal cases which come to autopsy the greatest accumulation of fluid is usually found. The great advantages of this procedure are ease of performance, minimum likelihood of injury of the heart muscle, absence of arrhythmia from tube irritation of the apex of the heart, adequate drainage of the oblique sinus, and the fact that drainage can be easily made dependent with slight change of posture of the patient. It is surprisingly satisfactory.

GILBERT COTTAM, M.D., Minneapolis

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

WRITING A HEALTH COLUMN

To the Editor—Our local papers feel that they are unable to take a syndicate service for a health column alone. We have decided that we will appoint one of the members of our county society to write a daily column on health subjects. We feel this is a necessary measure for disseminating accurate medical information to the laity. We would like to know what information and help we could get on this from the American Medical Association and would welcome suggestions on your part.

PAUL MAHONEY, M.D., Little Rock, Ark.

ANSWER—For help in writing a daily health column, which is a very difficult task, the following suggestions are made:

(a) Whoever undertakes the column should subscribe to *Hygeia*. Each month's issue of *Hygeia*, if cleverly used, will suggest enough material for a column a day and leave some over.

(b) The clip sheet of *Hygeia* articles, which is prepared each month, can be had on request. These articles will give suggestions as to the style and length of material suitable for newspaper use. They can be used as is, credited to *Hygeia*, but in any event it seems wise also to point out that *Hygeia* is published by the medical profession and, therefore, the county society is definitely identified with it.

(c) Whoever writes the column should have a complete set of pamphlets of the American Medical Association Bureau of Health and Public Instruction, Bureau of Investigation and Bureau of Medical Economics. They are listed in the catalogue of health publications.

(d) THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, especially the department of Queries and Minor Notes and the department of Book Notices, will furnish many suggestions for the column writer.

(e) There is also a choice from seventy-six topics listed in the pamphlet "Doctors and Public Speaking" which is available from the Bureau of Health and Public Instruction. One of these loan collections will furnish plenty of material, not for one daily column, but for a week.

The following suggestions are offered to column writers:

(a) Write simply using words that can be understood by the least educated and sophisticated of newspaper readers. A good test is to give the material to several children from 12 to 14 years of age. If they can understand it, any adult can who is able to read. Use correct terminology.

(b) Write often of simple things. Cancer, obdurate nervous diseases, peptic ulcers and pernicious anemia afflict few people. It is, pimples, superfluous hair, baldness, headaches and "ouch-mach" are common afflictions.

(c) Write sympathetically, especially when ridiculing false notions that are prevalent in the community.

(d) Write positively when possible. State the facts that can be stated and avoid as much as possible the mention of doubtful or controversial material. There are three kinds of facts for health writing "them as is, them as isn't, them as may be." The first two can be dealt with in simple definite manner. The third must be handled carefully when necessary, avoided when possible.

(e) Do not overemphasize the doctor. When medical attention is necessary, it should be advised without hesitation but direct praise of the doctor is in bad taste in a column sponsored by organized medicine.

(f) Avoid controversial issues, such as antivivisectionism, cultism and quackery. Telling the truth and ignoring controversy is the better educational technic.

(g) Do not attempt to answer questions unless the society can visualize in the future a budget for a constantly increasing volume of correspondence which will require the establishment of source files and numerous journals, books and other reference materials, as well as a growing personnel.

SECOND ATTACK OF GONORRHEA

To the Editor—In February 1936 a man stated that gonorrhea from which he was suffering had been present for seven or eight years. In 1928 he was exposed and went to see a doctor before the start of any discharge. The discharge came on and then for several months he was subjected to intensive treatment with injections foreign proteins and urinary antiseptics. Probably he was over treated. For three or four years he went through numerous hands attempting to clear up his condition. The prostate and epididymis were injected and massage foreign protein and even vasotomy were tried. Most of this time he was in competent hands. In 1931 he had about a dozen negative smears from the prostate so he married. At no time did his wife suffer symptoms suggestive of gonorrhea nor except for an occasional morning drop did the patient himself know anything was amiss. He had been told to ignore the morning drop by a physician after about a year of weekly massage and after his consecutive negative smears. Feb 23 1936 when I first saw the patient he had epididymitis an enlarged soft and tender prostate a smear of which was positive for gonococci and contained a great deal of pus. He was treated with foreign protein and light massage. Two weeks later a profuse discharge appeared. The patient was insistent that reexposure had not occurred. The epididymis at first subsided and flared up again after a month it localized and was opened. Pus positive for gonococci was found. At this time there was also a subacute exacerbation of an old arthritic or neuritic pain in his back and hips which had been present six years before. Since then I have spent my time using urethral instillations for the discharge foreign protein and a mild massage. Today the pus is still positive. The most amazing feature is that examination of his wife three months ago did not reveal any evidence of gonorrhea in her nor at any time has she had suggestive symptoms. Can you tell me what else there is I can do to bring about a cure? Would injections into the prostate through the perineum be advisable? Would any intravenous medication be efficacious? What would be the merit of prolonged heat therapy as is advocated? Please omit name.
M D Illinois

ANSWER—From the evidence presented it may be assumed that the patient was completely cured of the first attack of gonorrhea, which he contracted in 1928, this assumption is based on the facts that the patient had a prolonged course of treatment, a dozen negative smears were obtained from his prostate—and this is probably the most important bit of evidence that he was cured, it being assumed of course that whoever gave the report showing twelve negative smears was in a position to do this and at no time did the patient's wife show evidence that he had infected her. This point is stated so that one may say the patient did not infect his wife and she reinfect him.

With regard to the second attack the correspondent does not give any history of events just prior to Feb 23, 1936. At this time he saw the patient for the first time and found that he had an epididymitis an enlarged, soft and tender prostate, and that smears from the prostate contained pus and gonococci. Gonorrheal infections do not begin this way, therefore the patient had a gonorrheal infection for a week or two or possibly three before he was seen by the correspondent. The fact that the patient insists that reexposure did not occur must be taken with a grain of salt. Records do not indicate the existence of a patient who was cured of gonorrhea, according to the postulates mentioned, who then had a recurrence. The fact that the patient developed arthritis and neuritis can best be explained on the basis of the gonorrheal infection in the prostate.

Injections into the prostate gland through the perineum are definitely contraindicated. Heat therapy in cases of this kind has produced satisfactory results attention should be called to the fact that the treatment is not without its dangers that people have died as a result of prolonged heat therapy in the treatment of gonorrheal infections.

The patient may use a prostatic heater twice a day for fifteen minutes at a time and have mild yet firm massage of the

prostate and vesicles twice a week, to be followed by injections of silver salts into the anterior urethra—mild to be sure 5 per cent mild protein silver or 0.5 per cent strong protein silver. The chances are almost even that the patient has gonococci in both the prostate and the seminal vesicles, and the gonococci reinfect his urethra and when the massage and heat have resulted in eradicating the gonococci and in clearing up the infection in the adnexa, the urethritis will clear up. If however, the urethritis persists and the prostate and vesicles are free of pus one might examine the anterior urethra for infected follicles. It might be well to examine the external urethral orifice for the presence of periurethral passages that may harbor gonococci.

VASOMOTOR NEUROSIS OR RAYNAUDS SYNDROME

To the Editor—A woman aged 45 complains of blanching numbness and the sensation of pins and needles in the two distal phalanges of digits 2 and 4 of the right hand. This first occurred on a hot day last August while the patient was making beds. With cold weather there occurred an increase in frequency of the attacks which may last up to an hour. In the past two months similar blanching has occurred in the distal phalanges of digits 3 and 4 of the left hand. She now has attacks as frequently as three or four times a day. An attack was induced by holding the hands under cold water one minute and lasted about fifteen minutes on the right. The affected parts are blanched and distinctly cold and sensation is almost absent. The physical condition is not other wise remarkable. The blood pressure is 120 systolic 70 diastolic the pulse rate is 72. The deep reflexes are exaggerated and there is a coarse tremor of the outstretched fingers. The menses are unchanged and regular. The patient has consumed close to forty eight bottles of coca cola a week for the past five years. She also smokes twenty cigarettes a day. The blood calcium is 12.20 red blood cells number 4,350,000 the hemoglobin is 75 per cent. I am afraid that she has an early Raynaud's disease but would certainly like to know what there is in coca-cola. I would appreciate any help.

CHARLES KINGSBURY HAMILTON M D New York

ANSWER—The patient has a peripheral vasomotor neurosis and vasospastic phenomena belonging to Raynaud's syndrome. This syndrome occurs in women, is usually symmetrical and almost always involves the upper extremities. Excessive cigarette smoking has been held responsible for causing these symptoms of vasospasm. As far as is known there have been no case reports on peripheral vasomotor neurosis as being due to drinking coca cola. This beverage is supposed to contain a small amount of caffeine, which produces a brightening of the intellectual faculties and an increased capacity for mental and physical work. Caffeine like theobromine and theophylline, is related to the xanthine bodies and is supposed to be a vasodilator. It therefore could not produce vasospasm. It would be simple to determine whether the coca-cola is causing any of these vasospastic symptoms by having the patient quit drinking it. In all probability the spasms will recur. If this is so it is suggested that she stop smoking. Because of the recent onset of the symptoms, the cessation of smoking may be a sufficient enough measure to remedy the abnormal vasomotor impulse and the sympathetic nervous system. Theobromine has been used for years in the treatment of peripheral vasomotor disease.

TRAUMA AND CHARCOT JOINTS

To the Editor—A patient had an accident in a factory and four months later developed Charcot joints. At the time of the accident roentgenograms were taken of the joints which were negative. After four months roentgenograms showed characteristic tabetic changes. Is this man entitled to compensation? Could you cite a case in which it was received?
M D New York

ANSWER—This query brings up a highly controversial subject, one that has been argued in the courts many times, not so often concerning Charcot joints as in cases of tuberculosis and neoplasms developing after injuries. One view is that if a man is working and doing full duty he should be considered in perfect condition unless there is clinical or x-ray evidence to prove that he is not. If he then suffers an accident, following which tuberculosis, a tumor, a Charcot joint or necrosis develops, he is entitled to compensation.

A case cited by Pollosson and Arnulf as quoted on page 284 of Braham and Kahns 'Trauma and Disease, Philadelphia, Lea & Febiger, is as follows. A woman fell with her hands in extension the left hand receiving more weight than the right. There was no immediate difficulty following the accident, but eight days later the thumb was swollen and movements were painful. A month later she entered the hospital, where a diagnosis of tabetic arthropathy of the thumb was made. There were also definite signs of tabes present, but no other symptoms. The conclusion was reached that the localization of the disease in the joint was definitely due to the accident.

The ability of trauma to activate a basic process is generally accepted as its part in localizing a pre-existing process and

to an injured joint or member. The following is quoted from Braham and Kahn. The role of trauma in the production of symptoms of neurosyphilis, or in the modification of the course of the disease, has not been adequately established on a scientific basis. For practical purposes, therefore, one must depend on logical deductions. The one fact that stands out clearly is that neurosyphilis is the result of the invasion of the nervous system by *Spirochaeta pallida*. It seems a logical deduction, generally accepted by the medical profession and given the sanction of judicial opinions, that any type of trauma sufficient to cause definite organic changes in the central nervous system may act as a force in the production of neurosyphilitic symptoms which might not otherwise have appeared, or in accelerating the course of the disease process, or in aggravating symptoms already present, if the individual harbors the spirochete in his body, especially in the central nervous system. Unfortunately, there is no possibility of formulating hard and fast rules to guide one.

The following articles may be of interest

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PAINS IN THE LEGS IN CHILDREN

To the Editor—A 6½ year old boy has been suffering for the past two years with intermittent attacks of pains in the legs. At the onset which was at the age of 4½ years the attacks occurred approximately every ten days were usually nocturnal with an occasional diurnal attack and were accompanied by rather severe emotional upsets. Recently the periods between attacks seem to be lengthening the child experiences no attacks of pain during the day, and the emotional upsets are either absent or mild. The child has been examined on several occasions by two able orthopedic surgeons who found nothing except (1) moderately tight hamstrings (stretching of these muscles and gentle massage was without results) and (2) a minor degree of flatfoot, which was considered insufficient to produce the type of pain complained of by the patient. Roentgenograms showed no abnormality of the skeleton. Except for a period of vomiting between the ages of 6 months and 3 years which was attributed to forced feeding and anorexia at the present time the history is entirely irrelevant. What etiologic factors should be considered in diagnosing pain of this character and what management is suggested?

M D California

ANSWER—Pain in the legs in a child brings to mind first tuberculosis. The fact that in this case there have been intervals of complete freedom between attacks is against such a diagnosis. Once tuberculosis attacks a joint, although there may be remissions, there is always some residual disability such as stiffness in the mornings and varying degrees of restriction of motion. Also the fact that two orthopedic surgeons have examined the child is important for it is unlikely that they would fail to recognize a tuberculous joint. Legg's disease (Perthes' disease of the hip, or flat head) is seen usually in boys between 5 and 10 years of age and may cause nocturnal discomfort, but there is usually a lump even before the child complains. The x-rays should settle the question as to whether or not such a condition is present. All pain and discomfort may be referred to the knee although the pathologic change is in the hip.

Tight hamstrings indicate that the lesion might be in the knee, but the fact that during two years of observation nothing definite has been determined in spite of careful examination and the fact that emotional upsets have often accompanied the attacks are sufficient to put the examiner on his guard. Neuroses are fairly frequent in children and must be ruled out. Indefinite spells of pain in the joints of children for which no pathologic basis can be found do occur. They alarm the parents and worry the pediatrician and orthopedic surgeon. They were formerly called 'growing pain' but today such a diagnosis is not countenanced. It roentgenogram of the hip and the knee disclose nothing abnormal and the child finds nothing wrong, perhaps the child has a condition earlier called 'growing pains'.

Possible foci of infection such as bad teeth, tonsillitis, etc., should be ruled out. Under the conditions cited it is necessary. The child should be observed. The legs measured as to circumference. The mobility of the joints tested, and roentgenograms of the joints suspected. The child should not be restricted in his activity. If the complaints are established on an organic basis, treatment should be directed to the cause.

DYSMENORRHEA

To the Editor—Kindly give me the physiologic or functional explanations and reasons for both in the following case. A graduate nurse aged 26 married 2 years without pregnancy or the use of contraceptives has had dysmenorrhea with a heavy menstrual flow since having scarlet fever at 20 and has such painfully tender breasts for a week before menstruation that her clothes pressing on them bother her. She started menses at 12 years. She is thin but healthy in appearance is 5 feet 2 inches (158 cm) in height weighs 90 pounds (41 kg) and is very active physically and mentally. She thought when she was up a more sedentary life that her condition would improve. It did not and she was given ovarian tablets before her last menstrual period hoping that stimulating the ovarian action would possibly relieve the breast pain. It seemed to do so, but after flowing some twenty-four hours she was taken with severe flooding while sitting quiet. Physical examination revealed normal sized genitalia with no tumor growths, tenderness or adhesions. There was no tenderness in the region of the appendix. There were no varicose veins of the broad ligaments. The thyroid was not enlarged. The pulse was normal in rate and regularity. She can usually feel a pain in the region of one or the other ovaries at the time of ovulation. The bowel movements are regular. She has been able to be on her feet through the menstrual period until the last six months and would probably not have gone to a doctor if she had not seemed to be getting worse. She has had no venereal infection and was always well and strong except as stated.

M D Minnesota

ANSWER—Presumably the scarlet fever produced some disturbance in the internal genitalia which led to the dysmenorrhea and the increased menstrual flow. Since no gland product stimulates its parent gland, the administration of ovarian tablets to stimulate ovarian action was illogical. Furthermore, there is no reason to stimulate ovarian activity in this case because there may already be excessive production of estrogen. Parenthetically it may be added that desiccated ovarian substance is practically inert.

Since the patient is underweight, it is advisable to have her gain a few pounds. The pain that occurs at the menses and the profuse bleeding may both be due to excessive amounts of estrogen. This condition may be overcome in some cases by the administration of progesterone or progestin. One international unit of progestin should be given hypodermically every second day, beginning at about the middle of the intermenstrual period or when the patient experiences pain at ovulation and continued until the actual flow begins. It may be advisable to precede the use of progestin by a dilation and curettement. This operation may relieve the dysmenorrhea at least temporarily. More important still, it may permit a definite diagnosis of the uterine endometrium, such as hyperplasia, and it will almost certainly reduce the amount of menstrual bleeding at least for a few months. If relief is obtained by the dilation and curettement, the use of progestin should be postponed unless the histologic examination of the endometrium definitely shows hyperplasia of the endometrium.

STERILITY

To the Editor—A woman aged 27 married ten months in good general health desirous of having children fails to become pregnant. The menstrual periods are regular there are slight menstrual cramps. The period occurs every thirty days. She had delayed menstruation two months after marriage—fourteen days late—and then passed clots of blood with cramps apparently an abortion. She had a previous operation (Aug 25 1930) for appendicitis. The pelvis, which was explored at that time showed a very marked retroflexion, a round ligament purse string operation was done to separate the uterus, the right ovary was slightly cystic and was treated. Pelvic examination at present reveals the uterus still retroflexed. What are the chances of pregnancy in cases like this of retroflexion? What procedures should be instituted to promote pregnancy? The husband's spermatozoa are apparently normal. Would the supposed abortion be a cause of her sterility?

M D Pennsylvania

ANSWER—Many women who have had appendicitis before marriage are sterile but in a large proportion of them the sterility can be overcome. Uncomplicated spontaneous abortion rarely is followed by sterility. Retroflexion of the uterus by itself is not often the cause of sterility, but an easy way to determine this for the patient in question is to elevate the uterus and insert a pessary into the vagina. The pessary should be left in the vagina for at least three months. The patient could be instructed to be sure to have intercourse during the middle third of each menstrual cycle. If no pregnancy follows, the use of a vaginal pessary. A Rubin test should be performed. Gas passes through the tubes when the uterus is retroflexed. If the position of the uterus cannot be blamed for the sterility, there is obstruction to the gas when the uterus is retroflexed. The test should be repeated with the uterus elevated. If gas passes through the tubes when the uterus is elevated but not when it is retroflexed the patient should continue to wear a vaginal pessary. A suspension operation may be considered if the tubes are impermeable to gas iodized oil should be used.

be injected into the uterus to determine the site of the obstructions. It is conceivable, and it has happened, that in performing a suspension operation the fallopian tubes were mistaken for the round ligaments. Repeated attacks of appendicitis not infrequently result in the closure of the fallopian tubes. Whether or not to operate in the presence of impermeable tubes is a difficult question to decide. The results are not very promising. For a review of the literature on this subject see, J. P. Greenhill's article on 'Evaluation of Salpingostomy and Tubal Implantation for the Treatment of Sterility' (*Am J Obst & Gynec* 33:39 [Jan] 1937).

POSSIBLE CANCER OF BREAST

To the Editor—A woman aged 37 a nullipara was operated on five years ago and the left ovary (dermoid cyst) with the left tube a part of the right ovary (cystic degeneration) a part of the right salpinx and eight small intramural myomas of the uterus were removed. The monthly cycle of menstruation is twenty six days and the duration two and one-half days. About two weeks ago she experienced a feeling of fullness in the left breast and pain in the nipple and in the higher part of the breast at the edge of the pectoralis major muscle. By pressure on the nipple of the left breast there appears a gray greenish liquid by pressure on the right nipple there appears a gray milky liquid. No tumor is to be felt. High in the armpit on both sides is a small gland. A numb feeling is in the left arm. I thought the pain was in connection with diminished ovary substance and gave progynon B. Can it be cancer?

M. D. Dutch West Indies

ANSWER—From the description given there is no evidence that the patient has cancer of the breast. It is much more probable that the patient has some infection of the ducts of the breast, which gives rise to the fluid that can be expressed from the nipple. It is doubtful that endocrine therapy will do the patient any good. Warm moist local applications should be made to both breasts and if necessary, the secretion from the duct removed by a breast pump. Should any thickening or lumps appear, it may be necessary to incise the breast and give free drainage to any infected area. If such incision becomes necessary it may be wise to remove some tissue place it promptly in strong alcohol to fix it, and have a microscopic examination made of it. The type of inflammatory reaction could then be determined and might offer some suggestion for further treatment.

GANGLION OF THE WRIST

To the Editor—A colored man aged 33 stated that while packing aprons in a wringer in a laundry where he worked he twisted his left hand and wrist. About five minutes later a fellow worker called the patient's attention to a swelling on the ventral aspect of the affected wrist. The patient stated that he had never had any such swellings before. It was a soft cystic mass not attached to the skin. There was a distinct pulsation over the mass but this was evidently from overlying vessels. There is a history of the patient's having been treated for syphilis several years ago. A Wassermann reaction taken now is negative. Aspiration yielded a thick mucinous fluid obtainable only through a large bore needle. A diagnosis of ganglion was made. The question here is one of etiology. What relationship had the injury to the development of the cyst? Is it of traumatic origin? Was the trauma only a partial contributing factor in its production?

M. D. New York

ANSWER—Ganglion of the dorsum of the wrist results from a mucinous degeneration of the joint capsule or of the tendon sheaths. These cysts may be single or multilocular in character involving small or large areas. Their relation to trauma is frequently indefinite although they are often encountered in persons who use this joint excessively. The diagnosis may be made by the typical location in relation to tendon sheaths or joints, by the firm but cystic consistency and by transillumination. The recovery of thick, mucinous fluid is confirmatory. They should be differentiated from other forms of synovial disturbances, especially tuberculous tenosynovitis, xanthoma of the tendon sheath and arborescent lipoma.

The tumor mass mentioned was probably of long standing for it was first noticed by his fellow worker and not by himself, as probably would have been the case in a sudden swelling which undoubtedly would have been accompanied by some degree of pain. Symptomless ganglions are frequently present over long periods without their presence having been noted by the patient. The time elapsing between the reported injury and the recovery of thick mucinous fluid is important. The presence of such fluid suggests that the ganglion was of long standing, for otherwise the fluid would have been more serous in character. Any causative relation between the ganglion and the injury sustained may be questioned. At best such an injury might be a minor contributing factor first by revealing some dysfunction of the joint and secondly by attracting the patient's attention to the abnormal contour of the wrist.

LOCAL ANESTHETIC AND SKIN INJURY

To the Editor—Has there been anything in the literature relative to harmful effects of injections of procaine hydrochloride 1 per cent in the skin under high pressure? On various occasions I have had skin edges fall apart about the sixth or seventh day without any evidence of infection. Could it possibly be due to the pressure and poisonous effects of procaine in the skin?

W. L. Brown, M.D., El Paso, Texas

ANSWER—There are references in the literature to the untoward effect of injection of procaine hydrochloride on the skin. However, it is highly improbable that healthy tissue will not tolerate 1 per cent procaine solution in excessive amount unless injected so that the skin is separated from its lymph supply and absorption is slow. The more likely explanation, if the untoward result can be laid to the local anesthetic is that trauma was caused by the needle being passed through the tissue more often than was necessary. It is well to minimize the number of thrusts of the needle through tissue when depositing the anesthetic solution.

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TOXICITY OF FLUORIDES

To the Editor—What are the toxic properties if any of an aqueous solution of sodium fluoride used as a spray on clothing blankets or rugs for the prevention of moths? I am told that there are commercial products in which fluoride is incorporated in a colorless dye which is relatively permanent in its moth proofing effect and without any possible toxic effects. Any information on such compounds will be appreciated.

R. Barry Bigelow, M.D., Boston

ANSWER—Sodium aluminum silicofluoride, which is a water soluble substance used in the moth-proofing of fabrics and furs, is not known to be toxic in the amount used for this purpose. If it is toxic, this fact is not well established and the presumption is that at least it is far less toxic than ordinary sodium fluoride. Of various common compounds of fluorine, sodium fluoride is probably the most toxic. In concentrations of as little as one part per million of water in drinking water supplies mottled enamel of the teeth of children has occurred. In adults, as little as five parts per million of fluorine has led to a severe degree of mottled enamel. In animal experiments, such small quantities of sodium fluoride as 1 mg per kilogram of body weight has led to ill results. However for man the proportionate threshold of harm is apparently higher, from 6 to 10 Gm of sodium fluoride may be required to bring about fatality. There is some reason to believe that the commoner forms of fluorine ingested are transformed to calcium fluoride, which is said to be less toxic than the corresponding sodium compound. From weak solutions of sodium fluoride (1 or 2 per cent) mucous membranes may be damaged, but higher concentrations are required to damage the skin. It must also be remembered that some of the commercial moth proofing fluoride solutions may contain other ingredients that might be toxic.

BLOOD TESTS FOR NONPATERNITY

To the Editor—Can you inform me to what extent blood grouping is used in court procedures in legally establishing the nonpaternity of a child. I have at present a case in which the mother and the alleged father are in group O and the child is in group A. Under those circumstances would it be possible for the alleged father to be the father of the child?

Charles L. Sherman, M.D., Iverne, Minn.

ANSWER—Blood grouping tests have been used extensively abroad and to a certain extent in this country in court procedures for the purpose of establishing the nonpaternity of a child. As far as our country is concerned the tests have been most frequently used in New York State, but they have also been applied in Connecticut, New Jersey, Pennsylvania, Wisconsin, Maryland and California. Laws giving courts the authority to compel persons involved in paternity proceedings to submit to such tests have been passed in New York State and Wisconsin, and bills are pending before the legislatures in

New Jersey, California and Montana. Judicial notice of the value of the tests has been accorded by a number of courts, and the following reported decisions are representative:

Beuschel v Manowitz (1934), 271 N Y Supp 277
State v Damm (1936), 266 North Western Reporter, 667
Aias v Kalensnikoff (1937), 67 Pacific Reporter, 1059

A detailed discussion of this entire question appears in Report of the Committee on Medicolegal Blood Grouping Tests (*THE JOURNAL*, June 19, 1937, p 2138). Also see the article by S H Britt "Blood Grouping Tests and the Law" (*Minnesota Law Review* 21 671, 1937).

The case cited, in which the mother and the alleged father both belong to group O and the child to group A, does not satisfy the laws of inheritance of the blood groups. Hence one or the other (or both) of the supposed parents is not the real parent of the child. If there is no reason to doubt the maternity of the child, the accused man cannot possibly be the father of the child.

RESIDUAL URINE AFTER TRANSURETHRAL RESECTION

To the Editor—I have a patient, aged 55 who had a punch operation for prostatitis sixteen months ago. Since his operation he has been unable to empty the bladder completely. Following urination he has from 4 ounces to a pint (from 120 to 475 cc) of retention urine seepage at night. Robert's test shows much pus and a trace of albumin. There is no obstruction, a large catheter is passed without force. Please advise prognosis and treatment to improve the condition.

H A SIMRELL M D Stockton, Mo

ANSWER—There are many reasons for the occurrence of residual urine following transurethral resection, but from the data given a definite cause cannot be stated. Generally the chief reason is incomplete removal of obstructing tissue. The expert in transurethral prostatic resection will find it necessary to reoperate on about 10 per cent of his patients in the immediate postoperative period to eliminate the residual urine. During the next five years he will have to reoperate on about 5 per cent of his patients because of recurrence of symptoms. Rarely transurethral resection is done when the residual urine is due to a neurogenic bladder disturbance rather than prostatic obstruction. Such an operation cannot be expected to relieve the residual urine. Probably the seepage in this case is overflow incontinence, but this factor should be considered if further surgery is advised. A diagnosis of prostatic obstruction cannot be made by the passage of a catheter and this patient should have a careful cystoscopic examination. It has been found that the common place for tissue to be left behind is in the anterior portion of the lateral lobes. Unless this area is carefully inspected at the cystoscopic examination, the obstructing tissue will be overlooked. Should there be no obstructing prostatic tissue found at cystoscopic examination, the treatment should consist of an attempt to control the urinary infection by lavage of the bladder and acidification of the urine with from 4 to 5 Gm of ammonium nitrate daily combined with either mandelic acid or methenamine. Sterilization of the urine and eradication of the pyuria can hardly be expected with this amount of residual urine.

SHUFFLE FOOT

To the Editor—I would appreciate your sending me what information you may have on a nerve injury producing the shaking of the foot and knee popularly known as shuffle foot.

M D Illinois

ANSWER—We are not acquainted with any condition popularly known as "shuffle foot."

In the spastic or hemiplegic gait the leg is stiff and the affected foot is shuffled or, better scraped forward usually with circumduction. With bilateral spastic paralysis of the lower extremities the circumducting scraping motion of both legs produces a crossed progression or scissors gait. Such spastic paralysis is caused by a lesion of the pyramidal tract at some point in its course between the motor cortex and the anterior horn cells. In cerebral arterio sclerosis or frontal rigidity the patient may progress with very short shuffling steps.

Paralysis of the common peroneal nerve at the knee joint dorsiflexors of the foot results in a gait in which it is necessary for the patient to lift the foot high enough when walking in order to clear the heel. When the foot is moved forward (stepped forward) the patient usually lifts too high from the ground.

In tabes dorsalis due to degeneration of the posterior horns, the gait is unsteady, jerky, usually lifted too high from the ground. The patient must look at his feet when walking. In vision, he is unable either to walk

TREATMENT OF BURNING SENSATION AFTER ROENTGEN THERAPY

To the Editor—A white woman aged 72 had a radical operation for both breasts in 1928 for carcinoma. Two years ago small nodules began to appear in the scar and surrounding skin. Biopsy showed that they were malignant. During the past two years she has had intensive high voltage roentgen therapy. In fact the roentgenologist refuses to give her more. These nodules are increasing rapidly and are beginning to break down. At times the burning is intense and she does not care to take any more. Please omit name.

M D Missouri

ANSWER—A good preparation to put on an area in which the skin is not broken but which has been thoroughly irradiated and is itching or burning, consists of phenol 3 Gm (48 grains), zinc oxide 10 Gm (2½ drachms), glycerin 40 drops and sufficient solution of calcium hydroxide to make 120 cc. The bottle should be shaken and some of the fluid poured on absorbent cotton and dabbed on the irritated areas.

As an alternative to this mixture one may use the official solution of aluminum acetate for a day or two.

If the skin is broken and these preparations are too irritating a good ointment which protects the ulcerated areas from air and also has some analgesic effect is one made up of phenol 0.2 Gm (3 grains), oil of eucalyptus 2 cc (one half drachm), castor oil 8 cc (2 drachms) and sufficient petrolatum to make 30 Gm (1 ounce). In addition, small quantities of codeine can be administered in capsule, so that the patient does not appreciate that she is taking an opiate. A very useful formula is a capsule containing 0.2 Gm (3 grains) of acetylsalicylic acid 0.13 Gm (2 grains) of acetphenetidin and 0.03 Gm (one half grain) of caffeine citrate, and if this does not hold the patient, substitute an 0.008 Gm (one eighth grain) of codeine for the caffeine citrate. Then this can be alternated with bromide.

WASSERMANN TEST OF UMBILICAL CORD BLOOD

To the Editor—Please inform me as to the reliability of cord Wassermann tests as indicating congenital syphilis. In a case in which there is a positive cord Wassermann reaction, a positive Wassermann reaction on the mother and a negative Wassermann and Kahn reaction on the baby's blood, should antisyphilitic treatment be given the baby when there are no clinical signs of syphilis? In a case in which the mother has had no history of syphilis and has had three negative Wassermann reactions but a cord Wassermann reaction is obtained on the baby whereas the baby's blood Wassermann reaction is negative, should the cord Wassermann report be ignored?

M D, Rhode Island

ANSWER—A Wassermann test done on the serum obtained from the umbilical cord at birth is essentially a Wassermann test of the mother. Likewise a Wassermann test done on blood drawn from the baby during the first few weeks of life is not a true index that the child does or does not have syphilis. A positive test obtained at the second week of life may spontaneously become negative by the sixth week of the baby's life. In the case cited it would accordingly seem advisable to repeat the test several times at intervals of two weeks and thereafter according to the reports and the clinical development. If the test remains negative for six months, treatment for the child is not necessary.

The same answer is applicable to the second question, in that repeated tests of the child's blood are more authoritative than the test done on the cord blood serum.

VITAMIN B IN DEAFNESS

To the Editor—A man aged 35, recently asked my opinion concerning vitamin B in deafness. He tells me that his deafness is due to a catarrhal condition. He has consulted several otologists and has spent two years in Texas. Could you tell me the results of vitamin B in deafness?

M D Illinois

ANSWER—The use of vitamin B₁ in the treatment of deafness is in the experimental stage. The rationale of vitamin therapy is based on the assumption that some forms of deafness are due entirely or partially to disease of the auditory nerve and that vitamin B₁ plays an important part in the treatment of some forms of neuritis.

Although encouraging response has been noted in some ear clinics, no published reports are available as yet which can permit a clinical evaluation of this therapy. For experimental purposes the daily dose of from 1000 to 2000 international units of natural or synthetic vitamin B₁ by mouth has been arbitrarily selected. Suitable patients should be kept on this daily dose for from four to twelve weeks depending on the duration of the auditory neuritis present. When improvement is noted, the administration of vitamin B₁ may be continued for a longer period.

MEINICKE TEST FOR SYPHILIS

To the Editor—What is the value of Dr Meinicke's antigen which is advertised as a turbidity test and a microreaction? The advertisement states that this test has been endorsed by the Pasteur Institute the University of Vienna and a number of other authorities abroad and in this country. I am in need of a simplified method for the diagnosis of syphilis and would appreciate your evaluation of this test as to reliability compared with the Wassermann and Kahn tests.

SOLOMON WEISS M D Sisseton S D

ANSWER.—At the Copenhagen conference of the League of Nations Health Organization, held in 1928, Dr Meinicke demonstrated his turbidity test, but the results obtained with this test even in his own hands were so poor that he soon abandoned it and later came out with a clarification test, which has since undergone several modifications. There is no excuse for a method which as far back as 1928 proved unreliable.

UNDESCENDED TESTIS

To the Editor—I have as a patient a boy of 13 who was of premature birth. He is somewhat backward in his general mental development and also slightly in his physical development. He has a right scrotal hernia and a right undescended testicle. The hernia can be readily reduced and on straining the right testicle can be felt over the pubic symphysis but cannot be readily palpated unless the boy strains and apparently is undeveloped. What is the accepted treatment for a combination of this sort?

M D Illinois

ANSWER.—The boy should have the testicle brought down into the scrotum and the hernia corrected. This is not the type of case that one could expect to correct by any other method of treatment.

AGE OF MARRIAGE CONVENTION

To the Editor—It seems to be the custom for a man to wed a woman of the same age or several years younger than he. Also he is usually advised not to marry a woman five years older. Is there a medical reason for this? Does the potency of healthy women last as long as that of healthy men? What percentage of divorces actually are the direct or indirect result of sexual incompatibility? Can you refer me to a book which discusses the essentials of a happy married life including other phases beside sexual such as emotions, intellect, occupation and sanity or mental illness?

M D Oklahoma

ANSWER.—As a rule women mature much earlier than men and lose their potency much earlier. As a rule, women do not care for sexual intercourse after 50, whereas men at this age are at about the height of their sexual life and continue to have desire for from ten to twenty years more. Sensible women past 50 will not object to their husband's inclination, although they often do not enjoy the act.

"A Research in Marriage" by G V Hamilton and "What Is Wrong with Marriage?" by Hamilton and Macgowan, both published by Albert & Charles Boni, Inc., New York, give statistics on all the other questions mentioned.

SYPHILIS AND PREGNANCY HORMONES

To the Editor—Are there any references in the literature to the treatment of syphilis with pregnancy hormones alone or in conjunction with the heavy metals?

LOUIS J WEINSTEIN M D Denver

ANSWER.—There seems to be no report of the treatment of syphilis in human beings with pregnancy hormones. There are two articles on syphilis in animals with somewhat divergent conclusions.

Kemp J E. The Effect of Pregnancy and of Female Sex Hormones in Modifying the Course of Syphilis in Experimental Animals. *Infect Dis* 60 32 (Jan Feb) 1937.

Frazier C N, Mu J W and Hu C K. Influence of Estrogenic Substance upon Experimental Syphilis of the Adult Male Rabbit. *Proc Soc Exper Biol & Med* 33 65 (Oct) 1935.

In Kemp's article will be found other references of interest.

PSYCHOSIS FOLLOWING ATROPINE IN EYE

To the Editor—Can you send me any information regarding psychosis due to instillation of atropine for refraction of the eyes? Information available here does not reveal any cases in children and only one case in an adult.

L L BARROW M D New York

ANSWER.—As far as a search of the literature reveals, there are no recorded cases of psychosis following the use of atropine for refraction. Undoubtedly the condition does occur in children but it is only temporary. The psychoses and hallucinations due to atropine appear in the advanced stage of the poisoning and disappear spontaneously within a few hours after the use of the drug has been stopped.

Medical Examinations and Licensure

COMING EXAMINATIONS

STATE AND TERRITORIAL BOARDS

Examinations of state and territorial boards were published in THE JOURNAL November 27 page 1839.

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS Parts I and II Examinations will be held in all centers where there is a Class A medical school and five or more candidates who wish to write the examination Feb 14 16 May 9 11 (limited to a few centers) June 20 22 and Sept 12 14 Ex Sec Mr Everett S Elwood 225 S 15th St Philadelphia

SPECIAL BOARDS

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY Written examination for Group B applicants will be held in various cities throughout the country April 16 Applications due Feb 15 Oral examinations for Group A and B applicants will be held at San Francisco June 13 14 Sec Dr C Guy Lane 416 Marlboro St Boston

AMERICAN BOARD OF INTERNAL MEDICINE Examinations will be held in various centers of the United States and Canada Feb 14 Final date for filing applications is Jan 1 Chairman Dr Walter L Biering 406 Sixth Ave Suite 1210 Des Moines Iowa

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY Written examinations and review of case histories for Group B candidates will be held in various cities of the United States and Canada Feb 5 Applications must be filed at least sixty days prior to date of examination General oral clinical and pathological examinations for all candidates (Groups A and B) will be conducted in San Francisco June 13 14 Application for admission to Group A examinations must be on file before April 1 Sec Dr Paul Titus 1015 Highland Bldg Pittsburgh (6)

AMERICAN BOARD OF OPHTHALMOLOGY San Francisco June 13 All applications and case reports in duplicate must be filed at least sixty days before the date of examination Sec Dr John Green 3720 Washington Blvd St Louis Mo

AMERICAN BOARD OF ORTHOPAEDIC SURGERY Los Angeles Jan 14 15 Sec Dr Fremont A Chandler 6 N Michigan Ave Chicago

AMERICAN BOARD OF OTOLARYNGOLOGY San Francisco June 10 11 Sec Dr W P Wherry 1500 Medical Arts Bldg Omaha

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY New York Dec 29 30 Sec Dr Walter Freeman 1028 Connecticut Ave N W Washington D C

AMERICAN BOARD OF RADIOLOGY San Francisco June 10 12 Sec Dr Byrl R Kirklm 102 110 Second Ave S W Rochester Minn

North Carolina June Examination

Dr B J Lawrence, secretary, North Carolina State Board of Medical Examiners, reports the examination held at Raleigh, June 21, 1937. Eighty-two candidates were examined, all of whom passed. Thirty-nine physicians were licensed by endorsement. The following schools were represented:

School	PASSED	Year Grad	Per Cent
College of Medical Evangelists		(1937)	84.9
Howard University College of Medicine		(1935) 89 6	90.3
(1937) 81 7			
Emory University School of Medicine		(1937)	81
82 9 84 3 86 87 1 88 3 88 4 89 89 1 89 4 89 9			
89 9			
Chicago Medical School		(1937)	89.3
Northwestern University Medical School		(1937)	84.3
84 7 87 6 89 4 90 1			
Rush Medical College		(1937)	86.1
Louisiana State University Medical Center		(1937)	85.7
Tulane University of Louisiana School of Medicine		(1937)	88
Johns Hopkins University School of Medicine		(1935)	90.6
College of Physicians and Surgeons Boston		(1935)	85.9
Harvard University Medical School		(1934)	90.1
(1937) 85 88 9 90 7 94 9			
University of Rochester School of Medicine		(1936)	92.3
Duke University School of Medicine		(1932)	84
(1934) 90 4 (1936) 83 9 (1937) 80 89 9 90 1			
Jefferson Medical College of Philadelphia		(1935)	94.7
(1937) 88 89 9 91 3 92 92 3 94 3 94 9			
Temple University School of Medicine		(1936)	87.9
(1937) 84 85 85 7 87 3 88 3 88 4 88 7 89 91 92 4			
University of Pennsylvania School of Medicine		(1934)	94.7
(1937) 81 83 90 1 90 3 91 6 92 1			
Woman's Medical College of Pennsylvania		(1937)	90.1
Medical College of the State of South Carolina		(1937)	81.9
88 1 89 9			
Meharry Medical College		(1936)	88.3
Vanderbilt University School of Medicine		(1937)	88.6
89 4 90 9 92 3			
Medical College of Virginia		(1935)	87.3
(1937) 85 3 85 6 87 6 88 3 89 89 3 89 9			

School	LICENSED BY ENDORSEMENT	Year Endorsement Grad of
George Washington University School of Medicine		(1935) Maryland
Georgetown University School of Medicine		(1933) Maryland
Emory University School of Medicine		(1917),
(1926) Georgia		
Northwestern University Medical School		(1933) Louisiana
(1933) Illinois		
Indiana University School of Medicine		(1935) Indiana
State University of Iowa College of Medicine		(1931) Iowa
Louisiana State University Medical Center		(1937 2) Louisiana
Johns Hopkins University School of Medicine (1928)		(1930) Maryland
University of Maryland School of Medicine and College of Physicians and Surgeons		(1929) Ohio (1936) Maryland
University of Buffalo School of Medicine		(1906) New York

Duke University School of Medicine (1932), (1933) (1935, 2) N B M Ex
University of Oklahoma School of Medicine (1936) Oklahoma
University of Pennsylvania School of Medicine (1934) N B M Ex
Medical College of the State of South Carolina (1936) S Carolina
University of Tennessee College of Medicine (1931), (1935) Tennessee
Vanderbilt University School of Medicine (1929) (1931), (1933) Tennessee
Medical College of Virginia (1932 2)
(1933) (1934) (1935) Virginia
University of Virginia Dept of Medicine (1931), (1935) Virginia
McGill University Faculty of Medicine (1931) New Jersey

a specimen of a modern trend of research in physiology, the study of sleep, supported in part by contributions from the firm which manufactures Ovaltine, is inconclusive and far from flattering to the investigators involved or to the university in which the work was done.

Sex Instruction for Girls By Dr Flora Shepherd Paper Price 65
Pp 23 London Association of Maternity and Child Welfare Centres
[n d]

Book Notices

Russian Medicine By W Horsley Gantt M D Johns Hopkins University School of Medicine
Clio Medica A Series of Primers on the History of Medicine Edited by E B Krumbhaar M D Cloth Price \$2.50 Pp 214 with 12 illustrations New York Paul B Hoeber Inc 1937

This little volume is another of the handbooks of medical history published under the general title of Clio Medica. The author has published many of the chapters as individual essays in the *British Medical Journal*. He emphasizes in the preface his friendship with John Dos Passos, which inclines the informed reader very early to the expectancy of finding an approval in this book of socialized medicine. That expectancy is confirmed in the final chapter of this history, which is entitled "Soviet Medicine." In this chapter the author indicates, however, that the social insurance scheme has not been wholly of benefit. Thus he says "In thus replacing the private by a governmental doctor and providing free treatment for the employees, the state, in spite of remarkable progress, has attempted a larger task than it has been able at present to solve adequately. Doctors and medical personnel are tired, overworked and often indifferent, the system is slow and cumbersome, so that the patient is frequently 'well or dead' before his turn comes for the sanatorium. This condition of the doctors is improving with the increased numbers being turned out by the medical schools." Incidentally, recent visitors to Russia have pointed out that some of the doctors turned out by the hastily developed medical schools have hardly the education that we would give in this country to a well trained nurse. If one reads Dr Gantt's account for the facts that it contains one finds it rather hard to justify his interest in the 'sincere and determined attempt to create a new socialized medicine, in strict adaptation to the needs of the public, backed by all of the political and economic forces of the Soviet state.

Sleep Characteristics How They Vary and React to Changing Conditions in the Group and the Individual By N Kleitman F J Mullin N R Cooperman and S Titebaum The Department of Physiology of the University of Chicago Cloth Price \$1 Pp 87 Chicago University of Chicago Press 1937

There was a time when a physiologist might catch a few frogs, take a piece of wire and a bit of rubber borrow or build a kymograph, and with these and similar modest materials undertake to clarify fundamental problems of the action of the heart or the behavior of muscle but now judging by this little brochure, methods, apparatus and problems have changed. The present authors secured thirty-six human subjects gave them directions and printed forms for recording data fitted their beds with a device to record the motions of the sleeper—it is called a work adder—and proceeded to study the effects of drugs and foods on the characteristics of sleep. The data were then transferred to punch cards tabulated with the aid of a Hollerith census machine and the results treated by statistical methods. Among the conclusions so obtained appears the startling pronouncement (which however the writer of advertising copy seem to have known in advance) that Ovaltine is the only material which when taken at bedtime increases the percentage of morning feeling well rested. The record of waking up feeling refreshed on 52 per cent of mornings after taking no bedtime snack of any kind compared with 14 per cent of the mornings after taking 14 Gt. Common sense should dictate even the statistical methods employed in the differences or more extensive tests desirable before the authors could

This little book is apparently a collection of lectures delivered to young girls. The approach is along psychologic lines and there is a good effort to coordinate views on sex hygiene with mental hygiene. The book, however, is noticeably deficient in physiologic instruction. There are no diagrams and no bare discussions of the mechanism of reproduction, the glandular control of the sexual organs, the meaning of menstruation and other physiologic problems. The author repeatedly uses terms such as fertilization and ovum without definitions. It may be that the English girls of this age find the book informative, but it appears to offer too little factual material to satisfy the girls of this age group in America. In addition there is an evasive, apologetic manner in the book which was frequent in earlier American teachings but is outmoded at this time. In the description of childbirth, the pain attending this phenomenon is mentioned three times in two short paragraphs, and in spite of the fact that little description is given, the author finds it necessary to mention that the mother may be torn. This may open the presentation to the criticism that it is too frightening for young girls. Moreover, in the one paragraph referring to marriage the author finds it necessary to associate briefly the idea of physical marital relationship with animal experiences and then rushes on to reinforce the shamefulness of sex relations by discussing prostitutes. This appears to be an unfortunate and unnecessary association. On the psychologic side the author gives a number of good suggestions as to the way to get along with other people and the necessity for entering broadly into social relationships.

La chirurgie de la douleur Par René Leriche professeur de clinique chirurgicale à la Faculté de médecine de Strasbourg Paper Price 65 francs Pp 428 with 13 illustrations Paris Masson & Cie 1937

This volume is based on a course of twenty lectures delivered at the College of France. The author discusses the nature of pain and its physiology. The general plan of surgery for the relief of pain is described. Leriche's aim is to clarify several aspects of the problem of pain in which, for the past several years, surgery has given us an entirely new conception. The painful conditions the surgical therapy of which is discussed include trigeminal neuralgia, painful neuromas, causalgia, painful amputation stumps, painful vasoconstrictions and Raynaud's disease, arteritis, angina pectoris, painful scars and inoperable cancers. The book is well indexed and printed. Leriche is an earnest student and experienced teacher of this subject and his voice is that of authority. The book is of value to all interested in this subject.

Synopsis of Gynecology Based on the Textbook Diseases of Women By Harry Sturgeon Crossen M D F A C S Gynecologist to the Barnes Hospital St Louis Maternity Hospital St Louis and Robert James Crossen M D Assistant Professor of Clinical Gynecology and Obstetrics Washington University School of Medicine St Louis Second edition Cloth Price \$3 Pp 247 with 106 illustrations St Louis C V Mosby Company 1937

This small book was first produced in 1930 and is based on Crossen's "Diseases of Women." Through twenty chapters it follows the sequence of subjects in the larger book. The synopsis is printed in fine type, which makes free reading somewhat difficult but permits the authors to include in a pocket volume an unbelievable amount of valuable information, well arranged and well tabulated. Endocrinology is especially summarized, and this is indeed a difficult task to do successfully. The authors' discussion of the several types of vaginitis is well done and is only one of several indications that the work has been brought down to date. The diagnosis of cancer and the effects of radium on tissues are comprehensively covered in relatively few words. The chapters on menstrual disturbances and disorders of other organs in relation to gynecology are especially good, though concise, the chapter on venereal sexual disturbances began well but appeared finally to be less

ing in many essential details, owing obviously to its abbreviation. Details of surgical procedures are purposely omitted and would have been out of place if included. The illustrations are simple but effective line drawings, with a few reproductions of those in the parent book or from other works. As an explanation of why one would prepare a synopsis of a successful textbook, the authors state that this type of book is intended primarily for students who do not expect to practice gynecology extensively but who may often have need for a small reference book. It should be ideal for them, and likewise helpful for quick reference to those who intend to undertake at least a considerable amount of gynecologic practice.

American and Canadian Hospitals. A Reference Book of Historical Statistical and Other Information Regarding the Hospitals and Related Institutions of the United States and Possessions and the Dominion of Canada. Published under the Supervision of American Hospital Association Catholic Hospital Assn of the United States and Canada American Protestant Hospital Association Canadian Hospital Council. Second edition. Cloth. Price \$10. Pp 1448. Chicago: Physicians Record Company, 1937.

This is a valuable reference book of information regarding hospitals and related institutions of the United States, its possessions, and the Dominion of Canada. The main section is a list of the hospitals that are recognized in the American Medical Association's Register of Hospitals. It gives information regarding each of these institutions that has not been compiled elsewhere, especially history, organization and special services provided. The orderly arrangement facilitates finding the desired data. Other sections are equally informative. These include (1) a description of each of the fifty-six medical and hospital organizations that are active in the hospital field, (2) state, regional and local hospital associations and councils and associations of superintendents, and (3) standards for hospitals, including those of the American College of Surgeons, the American Medical Association and other standardizing agencies.

Physiologie du système lymphatique "Formation de la lymphe circulation lymphatique normale et pathologique." Par H. Rouvière, professeur d'anatomie à la Faculté de médecine de Paris et G. Valette, pharmacien des hôpitaux de Paris. Paper. Price 45 francs. Pp 160 with 33 illustrations. Paris: Masson & Cie, 1937.

This work is at once a textbook on lymphatic physiology and a review of current progress. The authors have given both a simplified discussion and an analysis of the works of a representative group of investigators. The text is simple and concise and easily readable even with an elementary knowledge of French. The first seven chapters deal with the normal physiology and anatomy of the lymphatic system, the composition of lymph and tissue fluid or "le liquide lacunaire," the physical and chemical factors modifying the production, composition and movement of these fluids, and finally the influence of the various classes of lymphagogues. This discussion is carried over into the second part of the book with applications to pathologic disorders such as regeneration of lymph nodes after extirpation, establishment of collateral circulation after interruption, and finally pressure edema and elephantiasis. Evidence on controversial points is well balanced and impartially presented, although the authors do not hesitate to advance their personal views on such points. The anatomic and histologic drawings are especially well done.

Interim Report of the Inter-Departmental Committee on the Rehabilitation of Persons Injured by Accidents. Home Office, Ministry of Health and Scottish Office. Paper. Price 4d. Pp 20. London: His Majesty's Stationery Office, 1937.

It is a peculiarity of the English compensation legislation that it provides only for cash indemnities and not for medical care. The result of this has been to throw most of the medical care into the voluntary and governmental hospitals. In the course of 1935 the numbers of new fracture cases treated in the voluntary hospitals which supplied figures were 132,702 treated as outpatients only and 45,478 as inpatients, or about 75 and 25 per cent respectively of the total number treated; the numbers treated in the municipal hospitals were 9,372 as outpatients only and 14,180 as inpatients. Not all these were industrial cases but a large percentage of them were. As a result of this situation the Inter-Departmental Committee prepared a scheme for the organization of fracture clinics on the basis of the general principles recommended in the British

Medical Association's Report." Since the surgeons in the voluntary and governmental hospitals are not permitted to charge for their services, practically all of this work was done without remuneration from patients or employers. It is proposed, however, that the surgeon who works in the "fracture clinics" should "receive some honorarium for his services." It is figured that "a large clinic in a city hospital of 500 to 1,000 beds dealing with 2,000 to 2,500 fractures per annum" would require one surgeon in charge, two whole time assistants, one resident radiographer, two resident house surgeons, one stenographer and one record clerk. It is proposed that the total cost of such a staff per annum would be £1,650, or a little over \$8,000. In spite of the use of the word "rehabilitation" in the title, there seems to be nothing in the report to indicate that rehabilitation, as it is understood in the United States, consisting of orthopedic treatment, education, training and placement, is to form any part of the new scheme. Appendices on the principles of modern fracture treatment, routine of a fracture department, planning of the clinic, and equipment are attached to the report.

Out of My Life and Work. By August Forel. Translation of Rückblick auf mein Leben by Bernard Miall. Cloth. Price \$3.75. Pp 352 with 8 illustrations. New York: W. W. Norton & Company, 1937.

Throughout this autobiography run the recurrent strains of the writer's interests in ants, hypnotism and total abstinence. Born and living most of his life in French speaking Switzerland, Forel was among the first to introduce more humane treatment of mental patients. His life was a strange mixture of conflicting emotions, understandable perhaps from his frank description of his ancestors and his shy and lonely childhood. Early in his professional life a friend had demanded of another doctor the truth as to his condition. He was told that he had only a short time to live and Forel, in spite of what he calls his truthful upbringing, thus learned, he says, the value of the occasional "ethical lie." A strain of naivete is illustrated in innumerable sections of the book and adds much to the charm. In one place he says, "Since then I have realized more and more clearly every year what an inestimable service the girl with whom I was in love in 1879 did me by rejecting my addresses. She herself married a wealthy numskull and had no children." In places the author's investigations on ants, his contacts with such persons as Lombroso, his political difficulties and his connections with total abstinence are of considerable scientific or historical significance. The type of life recorded seems far removed from any which we know today in this country, but as such it possesses a charm different from that of most of the recent biographies and autobiographies.

Immortal Names and Other Poems. By T. Wilson Parry, M.A., M.D., Fellow of the Society of Antiquaries and of the Geological Society. Cloth. Price 5s. Pp 122. London: Ulster Press, 1937.

Many of the poems in this book were printed in the *Cambridge University Society Magazine* and in the *St. George's Hospital Gazette*. The poems of the author are collected under various headings, including "Immortal Names," "Travel Sketches," "The Quest Eternal," "Miscellaneous" and "Trifles." The poems are mostly in sonnet form and practically all have a definite medical interest. The author is an active practitioner of medicine and also an authority on prehistoric trephining. The book is beautifully printed. The poems present a considerable inequality. Those dealing with the immortal names are of an exceedingly high order. Especially interesting, however, is one called "The Family Doctor—A.D. 2028," which begins

The General Practitioner is now alas no more
Gone are his lamp and speaking tube the plate upon his door
By Britain he was once beloved and wanted in his way
But constant Socialistic schemes have spoilt his kingly sway

Another verse says

A Minister of Health conceived a vast and crazy plan—
That Britons all should be upon the Panel to a man
So now the Art of Healing has been shifted to the State
Folks have to do as they are bid—A.D. 2028!

Fortunately the next six verses are succeeded by a concluding verse which reads

The Public will be satisfied if not they will protest
The Government pulls many strings and oftentimes not the best
But Parliaments may rise and fall it is their willful way
The General Practitioner has now returned to stay!

Handbook of Hygiene for Students and Practitioners of Medicine By Joseph W. Bigger M.D. Sc.D. F.R.C.P. Professor of Bacteriology and Preventive Medicine University of Dublin Cloth Price \$4 Pp 405 with 18 illustrations Baltimore William Wood & Company 1937

This small handbook of hygiene covers an almost unbelievable amount of ground. Vital statistics, insect-borne diseases, parasitic worms, occupational hygiene, poisonous gases, personal hygiene and the assessment of normal health are all included with the other subjects more commonly discussed in a short textbook of hygiene. The discussions are brief, as they needs must be, but on the whole the material is well selected and accurate. A sentence on page 107 is especially interesting in view of the recent furor about poliomyelitis. The sentence reads "Epidemics (of poliomyelitis) rarely occur in cities." This statement does not appear to apply in this country but may represent a difference in the biology of the disease in Ireland. There are no references to the literature in this book, but for the purpose of an elementary introduction to the subject it would be hard to find anything so inclusive, either more simply written or more condensed. For this purpose it should be of considerable use to teachers and students.

Précis de médecine coloniale. Par Ch. Joyeux professeur de parasitologie à la Faculté de médecine de Marseille et A. Sicé professeur à l'École d'application du corps de santé colonial de Marseille. Second édition. Cloth Price 170 francs Pp 1250 with 240 illustrations Paris Masson & Cie 1937

This work on colonial or tropical medicine is divided into three parts. In the first the diseases are grouped according to the organs affected: the digestive tract, respiratory system, blood and lymphatic systems, and so on; in the second the febrile maladies are considered, and in the third are grouped certain general conditions ranging from rabies to venomous bites and seasickness. Such a classification leads to many inconsistencies, as, for example, the separation of diseases the etiologic agents of which are closely related. In general the French colonial medical worker will find an excellent review of the field and a practical guide in this treatise. Although, as would be expected, specialists can find many omissions and certain interpretations with which they would disagree, in the main the various diseases are adequately considered from the standpoint of geographic distribution, etiology, pathology, symptomatology, treatment and prophylaxis. The authors have collected an immense amount of detail and have shown a nice discrimination in the comparative emphasis placed on the various subjects. The work is well illustrated, but it is to be regretted that so complete a work should contain so few detailed references to the literature.

Spontaneous Combustion. A Literary Curiosity. By John Rathbone Oliver. Boards Price \$2.50 Pp 27 with one illustration Chicago Argus Book Shop Inc 1937

Dr. Oliver was moved to write this pamphlet by the use which Dickens made of spontaneous combustion to remove a character in "Bleak House." Dr. Oliver has found similar records of spontaneous combustion in other early works of the nineteenth century. Apparently at that time the possibility of spontaneous combustion was accepted. He concludes that it was probably due to the fact that people drank much more pure spirits in those early days and that they came more frequently into contact with flames. Obviously a body thoroughly soaked with alcohol would burn much better than one which had not had the advantage of such inflammable material. The book is labeled "A Literary Curiosity. It is!"

Doctors on Horseback. Pioneers of American Medicine. By James Thomas Flexner. Cloth Price \$2.00 Pp 96 with 10 illustrations New York Viking Press 1937

The names of John Morgan, Benjamin F. Felt, Daniel Drake, William Beaumont, Crawford W. Long, and others who are the men whose biographies are the subject of "Doctors on Horseback" among the pioneer author tells their stories with a method that maintains interest well from the available material. Much material that previous biographies have analyzed of the characters of these

men who are more widely known. The author does not exaggerate these men but gives a true picture of them as they were in their practice and in their research. The book is nicely printed and is illustrated with some excellent portraits. Selected bibliographies and a good index complete the work.

A Brief Rule to Guide the Common People of New England How to Order Themselves and Thelrs in the Small Pocks or Measels. By Thomas Thacher. [First published in 1677/8 reprinted in 1800 and 1840.] Facsimile reproductions of the three known editions with an introductory note by Henry R. Viets M.D. Publications of the Institute of the History of Medicine the Johns Hopkins University. Fourth Series. Bibliotheca Medica Americana Volume I. Boards Price \$1.50 Pp 10 with illustrations Baltimore Johns Hopkins Press 1937

A Discourse upon the Institution of Medical Schools in America. By John Morgan. With an Introduction by Abraham Flexner. Reprinted from the first edition Philadelphia 1765. Publications of the Institute of the History of Medicine the Johns Hopkins University. Fourth Series. Bibliotheca Medica Americana Volume II. Boards Price \$1.00 Pp 41 with one illustration Baltimore Johns Hopkins Press 1937

These volumes come as publications of the Institute of the History of Medicine of Johns Hopkins University. They include in each instance a biographic note followed by a facsimile of the document mentioned in the title. They are certainly welcome editions to any medical-historical library.

Adaptation in Pathological Processes. By William H. Welch M.D. LL.D. With an Introduction by Dr. Simon Flexner. Reprinted from Transactions of the Congress of American Physicians and Surgeons 1897. Vol. IV pp 284-310. Publications of the Institute of the History of Medicine the Johns Hopkins University. Fourth Series. Bibliotheca Medica Americana Volume III. Boards Price \$1.50 Pp 53 Baltimore Johns Hopkins Press London Oxford University Press 1937

The two previous volumes in this series are Thomas Thacher's *A Brief Rule to Guide Common People of New England How to Order Themselves and Thelrs in the Small Pocks, Or Measels, 1677*, and John Morgan's *Discourse upon the Institution of Medical Schools in America, 1765*. The present volume reprints the presidential address by William H. Welch before the Congress of Physicians and Surgeons in Washington in 1897. Many older physicians will be glad of the opportunity to read (or reread) this brilliant 40 year old essay. In the words of the introduction, the essay is commended "to the attention of present-day students of medicine, to whom it should not fail to bring the pleasure and enlightenment enjoyed by an earlier generation."

Lungentuberkulose in Verbindung mit anderen Erkrankungen—ihre Häufigkeit und Behandlung. Von Dr. Klaus Briesch. Oberarzt am Tuberkulosekrankenhaus der Provinz Brandenburg zu Treuenbrietzen. 11 Heft Praktische Tuberkulose Bücherei. Behefte des Deutschen Tuberkulose Blattes herausgegeben von Kurt Klare. Paper Price 3.60 marks Pp 68 Leipzig Georg Thieme 1937

In this booklet a short but clear and well arranged survey is given of the problems arising from the coincidence of diseases of nontuberculous origin with an active tuberculosis. The main complications and their therapeutic management are given from the standpoint of treatment of the tuberculosis as well as of the complication. The book will be of value to the general practitioner as a source of quick orientation about the many problems that may arise. It is not comprehensive enough for the specialist. A rich and well arranged bibliography is added which will aid those who desire more detailed information.

The Specificity of the Wassermann Test in Syphilis. By E. H. Ruediger M.D. From the Department of Clinical Pathology, St. Joseph Hospital San Diego California. Paper Pp 8. The Author 1934

This little pamphlet reports on the accuracy of the Wassermann test with glycerinated human serum. The tests were applied to the blood serums of 306 student nurses, 206 pregnant women, 104 patients with malignant disease, 103 tuberculous patients and 106 with jaundice, and to the spinal fluids of 101 surgical patients. According to the author, the results demonstrated a high degree of sensitivity and accuracy, although no controlled comparisons with other methods were cited.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Trauma in Relation to Hernia, Hyperthyroidism and Neurocirculatory Asthenia—Napier, the plaintiff in this suit against the defendant railroad company, claimed that while he was riding as a passenger on the defendant's train the derailment of two cars caused him to be thrown against the seats and that as a result he had sustained a left inguinal hernia, which was followed by neurocirculatory asthenia and hyperthyroidism. From a judgment in the amount of \$7,500 for the plaintiff, the railroad company appealed to the Court of Appeals of Kentucky. The plaintiff's attending physician testified in his behalf as follows:

My diagnosis at first was a recurring hernia—may I say of traumatic origin? I took the patient's history in part as to that.

The next thing that ensued following this continuing my diagnosis was neuro-circulatory asthenia otherwise known as effort syndrome meaning concurrence known also as Soldier's Heart and caused by a greater than normal amount of adrenalin chloride in the blood stream the adrenalin coming from the adrenal or suprarenal [suprarenal] glands just above the kidneys and the adrenal glands arising from the same embryonic cell from which the sympathetic nervous system arises the sympathetic nervous system being that part of the nervous system which is composed of the ganglia or nerve stations along in front of the spinal cord in that portion running from the first dorsal vertebra to the last lumbar vertebra. This sympathetic nervous system goes to all the abdominal and all thoracic viscera and as stated arises from the same cell in uterine life or before birth or in the formation of a child that the adrenal glands arise from. For this reason they are closely related to the adrenal glands that are called the power house of the system. And in the presence of neuro circulatory asthenia they are always putting out more power than the sympathetic nervous system can use.

Then the next was hyperthyroidism which resulted from a hyper sensitivity of the thyroid gland to a presence of an over plus of adrenalin in the blood stream. This results in an overactivity of all the musculature in the entire body including the stomach and the intestines that is supplied with sympathetic nerves. Also the autonomic nervous system is undoubtedly affected and speeded up and we have what is known as hyperthyroidism or hyperkinesis which is an over action of the adrenal glands the sympathetic nervous system the thyroid and the anterior lobe of the brain.

The Court of Appeals interpreted this testimony to mean that the witness believed an excess of adrenalin chloride in the plaintiff's blood stream was apparently the moving factor in producing both the neurocirculatory asthenia and the hyperthyroidism. The witness also testified that the only causes of neurocirculatory asthenia are pain, hemorrhage, fear and worry, inhalation of anesthetics, infection, breaking down of the proteins, and asphyxia. He further testified that both the neurocirculatory asthenia and the hyperthyroidism from which the plaintiff suffered had been caused by a "breaking down of the proteins" which he described as a tearing of the muscles or a result of the tearing of the muscles, "the proteins" being "the amino acid of which the muscle is composed." He admitted that, although he had made many examinations for thyroid trouble, he had never before had a case of hyperthyroidism caused by a hernia. Another medical witness for the plaintiff also testified that the plaintiff was suffering from hyperthyroidism and neurocirculatory asthenia and that these conditions had been caused by the injury.

The plaintiff testified that he had had a hernia ever since he could remember but that it had been apparently cured by a herniotomy performed six years prior to the accident. Medical testimony indicated that a congenital hernia sometimes recurs even without apparent strain or injury. Physicians testifying for the railroad company stated that the plaintiff did not have hyperthyroidism either at the time of the accident or at the time of the trial. Several witnesses testified that there was no relationship between the hernia or the accident and hyperthyroidism. As to the alleged neurocirculatory asthenia one medical witness testified that if the plaintiff had not had a neurocirculatory asthenia at least to a relative extent prior to the accident he would not have had the original weakness of his abdominal musculature. Another witness stated that he was unable to name the causes of neurocirculatory asthenia but testified that a trauma severe enough to crush the body, break the bones and seriously destroy the soft tissue might produce a condition which would lead to it. Another witness testified

that there was no connection between a hernia and neurocirculatory asthenia and that an injury sufficient to produce a traumatic hernia would have caused a severe shock, accelerated heartbeat and chills, none of which signs and symptoms the plaintiff had ever manifested.

Apparently, the Court of Appeals did not believe that the plaintiff had sustained a traumatic hernia. It was pointed out that the plaintiff's own medical witnesses agreed that a traumatic hernia is accompanied by excruciating pain but the plaintiff's own testimony showed that he had suffered no such pain. Furthermore, his attending physician testified that he had first treated him for a congenital hernia rather than a traumatic one. The court further pointed out that this same witness admitted that an infection may cause the very condition which he ascribed to "the breaking down of the proteins," and the evidence showed that the plaintiff had suffered from infected teeth. Furthermore, there was evidence that the neurocirculatory asthenia existed prior to the accident. In the opinion of the court, the testimony with respect to the complications attributed to the accident was so highly speculative and vague as to be without probative value. Assuming that the evidence was sufficient to justify the submission of the case to the jury, the verdict of \$7,500 was in the opinion of the court flagrantly excessive and could not be allowed to stand. The judgment of the lower court, therefore, in favor of the plaintiff was reversed.—*Louisville & N R Co v Napier (Ky), 102 S W (2d) 1*

Dentists Retention of Dental Plate as Constituting Fraudulent Conversion—The defendant, a dentist, made a dental plate for a patient, the prosecutrix, and delivered it to her on her promise to pay him the amount charged for his professional services. Three months later the prosecutrix returned the plate to the dentist for an adjustment. At that time he demanded that she pay her bill and when she refused to do so he retained the plate on the theory that he was entitled to a lien on it for his services. He was later prosecuted and convicted under an indictment that charged him with fraudulent conversion. The dentist then appealed to the superior court of Pennsylvania.

The facts, said the superior court, do not warrant a conviction under the fraudulent conversion act. Under that act, any person having possession of any property belonging to any other person and who fraudulently withholds, converts or applies it to and for his own use and benefit is guilty of a misdemeanor. The statement of the lower court that "the defendant supposed he had a right to hold the plate" of itself negated the idea of a fraudulent conversion. The act requires an intent fraudulently to withhold, convert or apply the property of another. There was no evidence of such an intent. If there was a disputed question of title to the plate, the prosecutrix could have enforced her rights in an action of replevin or in a civil action for the value of the plate. The superior court reversed the judgment of conviction and discharged the dentist.—*Commonwealth v Irene (Pa), 190 A 171*

Evidence Admissibility of Examining Physician's Opinion Based on Subjective and Objective Symptoms

—The plaintiff, Brouette, sued the defendant utilities company to recover damages for injuries sustained as a result of an explosion in a building supplied with gas by the defendant company. From a judgment in favor of the plaintiff, the defendant appealed to the Supreme Court of Wyoming.

At the trial, three expert medical witnesses who had examined the plaintiff for the purpose of testifying later at the trial were permitted to give their opinions as to the extent and permanence of the plaintiff's injuries, based in part on statements made by the plaintiff to the physicians during the examinations. The Supreme Court agreed with the defendant that this testimony was inadmissible. As is stated in 22 C J 269, 270, a physician who examines a plaintiff not for purposes of treatment but for the purpose of qualifying as an expert witness relative to the extent and permanence of the plaintiff's injuries should when testifying, base his opinion on objective symptoms discovered by his examination or on assumed facts contained in a proper hypothetical question or on a combination of the two and not on what was told to him by the injured person. When it becomes necessary and is competent for an expert witness to base an opinion partly on statements made to him by

a plaintiff, the substance of such statements should be disclosed so that the jury may judge whether they conform to the actual facts as shown by the evidence. Under such circumstances the jury should be cautioned by the court to disregard any opinion based in part on assumptions of nonexistent facts. While the court was of the opinion that the questioned testimony was improper and should not have been admitted, it did not believe that its admission constituted reversible error. The testimony was largely cumulative and of a nature similar to that given by another medical witness to which the defendant had taken no exception.

Accordingly, the Supreme Court affirmed the judgment in favor of the plaintiff—*Northwest States Utilities Co v Broulette (Wyo)*, 65 P (2d) 223

Dental Practice Act Effect of Repeal and Reenactment of Dental Practice Act, with Amendments, "Moral Turpitude" Construed—The defendant was licensed to practice dentistry in Maryland in 1926. In December 1935 the Dental Examining Board revoked his license on the ground of conviction of a crime involving moral turpitude. The defendant instituted mandamus proceedings against the board in the Baltimore city court, that court canceled the revocation order, and the board appealed to the Court of Appeals of Maryland.

The dental practice act under which the defendant was licensed was passed in 1920. In 1933 the legislature repealed the earlier act and reenacted it, with amendments. Section 11 of the 1933 act provided:

Nothing in this Article, or in any other provision of this Code, shall be so construed as to interfere with the rights and privileges of persons holding certificates duly issued to them by the State Board of Dental Examiners of Maryland prior to the passage of this Act.

The effect of this provision, the defendant contended, was to deny to the board of dental examiners the right to revoke his license since he was licensed under the act existing prior to the 1933 act. With this contention, however, the Court of Appeals disagreed. The section quoted, said the court, was a repetition and reenactment of a similar section contained in the act of 1920, which was in effect when the defendant was licensed to practice dentistry and which was not even interrupted by the act of 1933 and was as much in force as if it were still the act of 1920. The law in Maryland with respect to the repeal and reenactment of statutes, said the court, was clearly set forth in the case of *Ireland v Shipley* 165 Md 90 166 A 593, as follows:

It is also settled law in this state that where a statute is repealed and reenacted with amendments and the amended statute contains substantially the same provisions as the original the continuity of the original as to those provisions is not affected.

The court held, therefore, that the state board of dental examiners was not lacking in authority to hear and determine the charges preferred against the defendant.

In the revocation proceedings, the board charged that the defendant, on three separate occasions had been arrested on charges of indecent exposure, and that he pleaded guilty in each instance and was convicted. The defendant contended, however, that a conviction of the offense of indecent exposure did not constitute a conviction of an offense involving moral turpitude. Lexicographers and courts agree said the Court of Appeals, on the definition of 'moral turpitude' but courts do not agree on its application. Bouvier's Law Dictionary (Rawle's Third Rev.) 2247 defines it as 'An act of baseness, vileness or depravity in the private and social duties which a man owes to his fellow men or to society in general contrary to the accepted and customary rule of right and duty between man and man'. The word 'turpitude' is defined in the Oxford Dictionary as "Base or shameful character; heinous vileness; depravity, wickedness". The word moral in combination with the word "turpitude" is the court said a figurative expression which does nothing more than attach a moral character to the word "turpitude". The court knew of no authority which held that a charge of indecent exposure constituted an offense involving moral turpitude, but the court thought it required no such authority to prove that the offense is such as to reflect on the character of the offender and that the offender not wanting in decency and morality. The defendant admitted that he had been convicted of the offense of "indecent exposure" three times.

mony before the said Board showed that he had not committed the offense in any public place and that the circumstances were entirely accidental." But, the court said in answer of the board to which the defendant demurred stated facts showing that the exposures were public and intentional. It has been held that an act does not involve moral turpitude unless it was intentionally done or was not innocent in its purpose. In the opinion of the court, however, this was neither the time nor the place for the defendant to protest his innocence or to contend that the offenses were accidental or unintentional. His protestations were not consistent with his previous pleas of guilty to a charge which, if unfounded, should have been resisted. The pleas and convictions implied publicity and intention. The first plea and conviction, occurring in 1931, might have been overlooked or dismissed as too remote the court said, but it cannot now be overlooked when considered with two similar offenses committed within four days in February 1935. The defendant thus practically forced the board of dental examiners to act. The court, therefore, reversed the order of the Baltimore city court canceling the revocation of the defendant's license—*Brun v Lazzell (Md)*, 191 A 290.

Chiropractic Revocation of License Not Barred by Statute of Limitations—On March 8, 1930, a complaint was filed with the California board of chiropractic examiners charging that Hartman, a licensed chiropractor, had employed fraud and deception in applying for his license in that he falsely stated in his application that he had never been convicted of a crime involving moral turpitude. The complaint charged that Hartman, on Nov 2, 1916, had been convicted of murder in the first degree. So far as the record shows, no action was taken on this complaint until Aug 2, 1936, when a hearing was had at which Hartman was present and testified. A certified copy of the judgment of conviction of murder in the first degree was introduced in evidence, showing that Hartman was sentenced to the state prison for life. It was further shown, however, that the life term was subsequently commuted and that Hartman served the commuted term. The board revoked Hartman's license, the superior court, city and county of San Francisco upheld the revocation, and Hartman appealed to the district court of appeal, first district, division 1, California.

Hartman contended, among other things, that the crime for which he was convicted was not a crime involving moral turpitude. The court, however, dismissed this contention as without merit and further observed that the commutation of the sentence did not nullify the original sentence or lessen the offense but merely substituted a lesser for a greater punishment. Hartman further contended that the proceeding to revoke his license was barred by the statute of limitations, but, said the court, the statute does not apply to revocation proceedings. *Bold v Board of Medical Examiners (Calif)*, 133 Cal App 23, 23 P (2d) 826.

In a recent case, said the court it was held that prohibition will not lie to restrain the revocation of licenses by boards of this character, the function of the board in such proceedings being administrative and not judicial. *Whitten v California State Bar (Calif)*, 65 P (2d) 1296. For the same reason certiorari will not lie. There being no facts in the present case that in the opinion of the court warranted other relief, the judgment of the superior court upholding the action of the board of chiropractic examiners in revoking Hartman's license was affirmed—*Hartman v Board of Chiropractic Examiners (Calif)*, 66 P (2d) 705.

Society Proceedings

COMING MEETINGS

- American Academy of Orthopedic Surgeons Los Angeles Jan 17
- Dr. Carl E. Badgley 1313 East Ann St. Ann Arbor Mich. Secretary
- Atlantic Dermatological Conference Philadelphia Dec 11 Dr. T. H. B. Butterworth 411 Walnut St. Philadelphia Secretary
- Society for the Study of Asthma and Allied Conditions New York Dec 11 Dr. W. C. Spain 116 East 53d St. New York Secretary
- Society of American Bacteriologists Washington D. C. Dec 21 Dr. I. L. Baldwin College of Agriculture University of Wisconsin Secretary
- Southern Surgical Association Birmingham Ala. Dec 29 Dr. A. Ochsner 1430 Tulane Ave. New Orleans Secretary

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers in continental United States and Canada for a period of three days. Periodicals are available from 1927 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them. Titles marked with an asterisk (*) are abstracted below.

American Journal of Ophthalmology, St Louis

20 985 1086 (Oct.) 1937

- Contribution to Theory and Practice of Tonometry J S Friedenwald Baltimore —p 985
Staphylococci Conjunctivitis Experimental Reproduction with Staphylococcus Toxin J H Allen Iowa City —p 1025
Preliminary Report of a Case of Keratoconus Successfully Treated with Organotherapy Radium and Short Wave Diathermy H L Hilgartner H L Hilgartner Jr and J T Gilbert Austin Texas —p 1032
Stable Nonirritating Solution of Physostigmine Salicylate A M Hicks San Francisco —p 1040
Spherophakia Luxation of Lenses and Secondary Glaucoma Relieved by Extraction of Lenses I Jacobs Brooklyn —p 1042

Annals of Internal Medicine, Lancaster, Pa

11 575 700 (Oct.) 1937

- Clinical Use of Sulfanilamide and Its Derivatives in Treatment of Infectious Diseases P H Long and Eleanor A Bliss Baltimore —p 575
Hereditary Factor in Essential Hypertension E A Hines Jr Rochester Minn —p 593
Factors Influencing Prognosis in Diabetic Coma E S Dillon and W W Dyer Philadelphia —p 602
Hypertiriodism in the Negro W B Porter and H Walker Richmond Va —p 618
Acute and Subacute Pulmonary Involvement in Rheumatic Fever Notes on Complication of Basal Pulmonary Collapse B A Gouley Philadelphia —p 626
*Necessity of Certain Criteria for Diagnosis and Cure of Rheumatoid Arthritis R L Cecil New York —p 637
Metabolic Studies in a Man Who Lived for Years on a Minimal Protein Diet F Strick Würzburg Germany —p 643
Pharmacologic Study of Mechanism of Gout G P Grahfield Boston —p 651
*Lymphosarcoma Cell Leukemia R Isaacs Ann Arbor Mich —p 657
Flow and Concentration of Blood as Influenced by Ergot Alkaloids and as Influencing Migraine W G Lennox and Hildegard C Leonhardt Boston —p 663
Intravenous Liver Extract in Therapy of Pernicious Anemia Report of Case H B Mulholland University Va —p 671
Familial Shift to Left of Leukocytes (Pelger's Nuclear Anomaly of Leukocytes) Report of Case W Tileston New Haven Conn —p 675

Criteria for Diagnosis and Cure of Rheumatoid Arthritis—Cecil considers the criteria necessary for the diagnosis of rheumatoid arthritis by dividing them into pathologic clinical, roentgenologic and serologic observations. A patient with rheumatoid arthritis should present the picture of a chronic progressive multiple arthritis characterized in its earlier phases by swelling of the soft tissues and in its later stages by some ankylosis and deformity. Implication of the interphalangeal, metacarpophalangeal and wrist joints is especially characteristic. The synovial membrane and the subcutaneous nodules, when present, show specific histologic changes. The roentgenographic evidence is quite typical, and the patient's serum in a large majority of cases will induce an agglutination of the hemolytic streptococcus. A rapid sedimentation rate of the red blood cells is highly characteristic but is seen in other forms of infectious arthritis as well. The first criterion for determining the cure of rheumatoid arthritis should be clinical cure evidenced by freedom from pain and swelling of the joints and partial or complete return of function of the joint. In addition the patient should feel well and should be entirely relieved of the exhaustion and fatigability which so frequently accompany the disease. In a cured case the sedimentation rate of the red cells should return to normal and the specific agglutinins for the hemolytic streptococcus should disappear from the patient's serum. The leukocyte count returns to normal and the secondary anemia is replaced by a normal blood count. The patient should not be considered as cured until he has remained free from symptoms for at least one to two years. The author thinks that if the curative effects of the numerous types of

therapy were analyzed with such criteria in mind, perhaps fewer but more intelligible contributions on the treatment of rheumatism would be made.

Lymphosarcoma Cell Leukemia—Of the forty-three patients with known lymphosarcoma that Isaacs has encountered, a leukocytosis developed in fifteen (ten men and five women) during the course of the disease. There were eight positive biopsies and six necropsies. The ages of the patients ranged from 6 to 70 years. To observe how a lymphosarcoma cell would appear if it was in the blood stream, pieces of fresh lymphosarcoma glands were stirred in blood serum, and films were made of this suspension. These were stained with Wright's stain alone or preceded by brilliant cresyl blue while the cells were in the moist state. The cells are not lymphocytes but lymphosarcoma cells, so that the condition is a true lymphosarcoma cell leukemia.

Archives of Ophthalmology, Chicago

18 501 696 (Oct.) 1937

- Treatment of Detachment of the Retina H Arruga Barcelona Spain —p 501
Treatment of Ocular Tuberculosis A C Woods and M E Randolph Baltimore —p 510
Cortical Innervation of Ocular Movements in Horizontal Plane L J J Muskens Amsterdam Netherlands —p 527
Detachment of Retina Operative Results in 164 Cases J H Dunnington and J P Macne New York —p 532
Intra Ocular Neurofibroma Report of Case J T Stough Houston Texas —p 540
*Surgical Management of Ptosis with Especial Reference to Use of Superior Rectus Muscle P C Jameson Brooklyn —p 547
*Formation of Preretinal Connective Tissue in Vitreous in Acute Choroiditis Report of Three Cases A Knapp New York —p 558
Pathogenesis of Disciform Degeneration of Macula F H Verboeff Boston and H P Grossman Providence R I —p 561
Localization of Changes in the Eyeground and Peeling of Their Projections on the Sclerotic Report of a New Method A I Dashersky Kharkov U S S R —p 586
Bilateral Metastatic Carcinoma of Choroid Report of Case M Cohen New York —p 604
Ocular Disturbances Associated with Experimental Lesions of Mesencephalic Central Gray Matter with Especial Reference to Vertical Ocular Movements E A Spiegel Philadelphia and N P Scala Washington D C —p 614
Orbital Abscesses R C Gamble Chicago —p 633

Surgical Management of Ptosis—Jameson describes an operative technic for the management of ptosis in which the following principles are involved: 1 Use is made of the entire strength of the unutilized superior rectus muscle. 2 A direct incision is made into the cartilage, with entrance into a pocket prepared for the reception of the folded muscle, instead of the incision into the levator muscle or the tarso orbital fascia into the postorbital region. 3 The muscle is shortened and consequently the lid is elevated by the folding of the attached muscle on itself prior to its introduction into the pocket and the tarsus is elevated by placing the incision in the cartilage farther below the curve. 4 The folded shortened muscle is attached securely. The author believes the new operation is a stronger, simpler, quicker and less complicated procedure than the Motais operation and one which by reason of its flexibility of gradation and shortening is attended with a higher return of correction. He has performed the operation in eight cases with success.

Formation of Preretinal Connective Tissue in Vitreous—Knapp states that the opacities of the vitreous which accompany acute exudative choroiditis usually become absorbed in time and do not interfere with vision unless the choroidal focus invades the macular region. Sometimes a band of opacity remains which extends from the nerve head to the area of choroidal atrophy. A more unusual permanent change is the opacity of the vitreous observed in three cases. The vitreous is clear except for this opacity, which is situated just in front of the retina and seems to have a predilection for the macular region. The opacity adheres to the retina and is irregularly branching, whitish of varying thickness in the center and fading out at the periphery. It seems anchored to the internal membrane of the retina. It always covers the retinal blood vessels and newly formed capillaries do not penetrate the opacity. In this respect it differs from retinitis proliferans. Nor does it ever detach the retina or even exert any traction. The opacity tends to become thinner, though it never disappears and final vision is often surprisingly good. The choroidal lesion is always large and not connected with opacity of the vitreous.

be drawn between the initial lesion, the duration of treatment and the cystometric observations. In the cases in which cystometry was employed the bladders dealt with were compensated, as was evidenced by the absence of residual urine, freedom from urinary symptoms and infections. Four patients had normal cystometrograms, four, while apparently within normal limits, had a latent desire to void and gave at least suggestive signs of an early neurogenic involvement, and sixteen patients had prediagnosed neurogenic bladders based on the usual criteria for interpretation. Cystoscopy was performed in seventeen cases. Four cases showed neurogenic bladders cystoscopically. In five cases the observations, while suggestive, alone were insufficient for a definite diagnosis. In three cases cystoscopy was apparently negative, while the cystometrograms demonstrated neurogenic bladders.

Kansas Medical Society Journal, Topeka

38 413 456 (Oct.) 1937

- Insulin Shock Therapy Observations on Six Cases J Russell and R M Fellows Osawatome—p 413
Treatment of Acute Septic Gonorrheal Arthritis C Romhold Wichita—p 418
Tuberculin Tests in 1954 College Students M W Husband Manhattan G M Tice Kansas City and D T Loy Manhattan—p 420
Deficiency Polyneuritis R R Sheldon Salina—p 422
Value to the Medical Profession and the Public of Reporting Venereal Diseases R H Riedel Topeka—p 425

Kentucky Medical Journal, Bowling Green

35 453 496 (Oct.) 1937

- What Is New in Medicine? A C McCarty Louisville—p 456
What Is New in Surgery? L W Frank Louisville—p 459
Chronic Bright's Disease G W Payne Bardwell—p 463
Treatment of Meningococcal Meningitis F H Hodges and C Shields Pikeville—p 464
Treatment of Chronic Functional Diarrhea J M Kinsman Louisville—p 466
*Hirschsprung's Disease Subsyndrome of Congenital Hypothyroidism R A Bate Louisville—p 469
Dentigerous Cyst Report of Two Cases A L Bass Louisville—p 473
The Human Tuberculin Test A Bloch Louisville—p 475
Use of Serum in Treatment of Pneumonia C Morse Louisville—p 476
Empyema M J Henry Louisville—p 478
Premature Ventricular Contractions in a Child E C Humphrey Louisville—p 483
Neurologic Changes Associated with Pernicious Anemia J J Moren Louisville—p 484
Medical Education in England J K Mack Louisville—p 487
Syncope M M Weiss Louisville—p 489

Hirschsprung's Disease—Bate discusses a case of Hirschsprung's disease in which the symptoms of congenital hypothyroidism were so definite that it is believed that the proved pathologic changes of the two diseases justify the assumption that Hirschsprung's disease is caused by congenital hypothyroidism in probably all cases and is therefore not a disease but a subsyndrome of hypothyroidism.

Laryngoscope, St Louis

47 707 776 (Oct.) 1937

- Allergic Diseases of the Ear L W Dean J S Agar and L D Linton St Louis—p 707
Induced Nystagmus in Monkeys Following Peripheral Vestibular Lesions (with Clinical Correlations) P Northington and S E Barrera New York—p 729
Report of Board of Trustees of Research Fund J B Rae New York and J G Wilson Chicago—p 755
Report of the New York Committee on Otitic Meningitis J G Dwyer New York—p 757
Report of the Chicago Committee on Otitic Meningitis A Lewy and E W Hagens Chicago—p 761

Maine Medical Journal, Portland

28 229 258 (Oct.) 1937

- *Operative Treatment of Urinary Stone W C Quimby Boston—p 229
Developments in Treatment of Conjunctivitis S J Beach and W R McAdams Portland—p 233
Treatment of Edema with Especial Reference to Use of Diuretics C W Steele Auburn—p 236

Operative Treatment of Urinary Stone—Quimby declares that a proper medical decision should be made as regards treatment in every instance of renal calculus, at the first onset of symptoms. Such a decision is aided by a minute study of the history, symptoms and physical examination. Each instance of urinary stone must be studied in detail before a proper decision can be taken as to the best course to pursue—whether

nonoperative or operative. If operation is to be undertaken, every effort must be made to rid the kidney entirely of all calculi. Much help in this regard is furnished by the portable x-ray apparatus, the suction tube and the coagulating electric current. By their use the surgeon is enabled to save many kidneys in cases that would otherwise terminate in undesirable nephrectomies.

New England Journal of Medicine, Boston

217 611 642 (Oct. 14) 1937

- Personal and Sociologic Factors in Prognosis and Treatment of Chronic Alcoholism K J Tillotson and R Fleming Boston—p 611
Typhoid Prostatovesiculitis A Riley and H I Suby Boston—p 616
Oliver Wendell Holmes and the Physician Poet Mary Louise Marshall New Orleans—p 618
Incidence of Coronary Artery Sclerosis in the Aged I B Akerson J F Dias Jr and R T Monroe Boston—p 622
Gonococcal Infections in the Male Associated with Hypospadias N D Shaw C H Reinhardt and W M Brunet Chicago—p 624
Hepatomegaly and Jaundice in a Juvenile Diabetic R P Stetson and W R Ohler Boston—p 627

New York State Journal of Medicine, New York

37 1707 1794 (Oct. 15) 1937

- Coronary Artery Thrombosis Mode of Death and Analysis of Fatal Cases A M Master S Dack and H L Jaffe New York—p 1707
*Cutaneous Eruptions in Gonorrhea O L Levin and S H Silvers New York—p 1712
Erythrocyte Sedimentation Rate Diagnostic Value in Thyroid Disease Clinical Observations and Survey of the Literature R R Moolten and B A Goodman New York—p 1720
Injection Treatment of Hernia B L Coley New York—p 1726
Related Fibula J J Kirschenmann Brooklyn—p 1731
Dental Caries in Children Clinical Control I N Kugelmass New York—p 1733
*Sulfanilamide Report of Case J Millett Hempstead—p 1743
Meningococcemia Treatment with Sulfanilamide and Prontosil Report of Two Cases J F Zindel and D Greenberg New York—p 1744
Immune Serum and Prontosil Combined Treatment for Protection of Mouse Against Fatal Dose of Haemophilus Influenzae Meningitis Preliminary Report Olga R Povitzky New York—p 1748
Radiation Pleuropneumonitis L Nathanson Brooklyn—p 1751
Cancer of the Breast Present Status of Surgery and Irradiation Therapy F E Adair New York—p 1758
Trends in Obstetrics L R Mellor Syracuse—p 1763

Cutaneous Eruptions in Gonorrhea—Levin and Silvers discuss the cutaneous complications of gonorrhea and classify them into two principal groups: (1) the localized forms that occur usually in the neighborhood of the primary focus of infection and result from direct infection of the skin by the gonococci or as a result of irritation by the secretions and secondary infections by alien bacteria and (2) the generalized forms, probably metastatic, and caused by the transport of the gonococci by the blood stream to the skin, at which point eruptions result from the action of the micro-organisms and their toxins. It is difficult to correlate the macular, papular and urticarial eruptions positively with the gonococci in suspected cases. The specificity of the keratodermic type of the blennorrhagic eruption has frequently been questioned by some because of the similarity of this eruption to certain clinical forms of psoriasis. The definite clinical course of keratoderma blennorrhagica in one of the authors' patients ruled out any suggestion of psoriasis. There was no personal or familial history of psoriasis before the onset of the illness. The patient had a gonococcal urethritis, which was followed by involvement of the joints and cutaneous complications. The heaped-up character of the lesions, which suggested crusts rather than the scales of psoriasis, and the acute nature of the illness, all pointed to gonococcal infection. A positive blood culture was not obtained nor were the organisms recovered from the lesions. The hemorrhagic form of cutaneous eruptions suggests gonococcal septicemia in which the important clinical data to be taken into consideration are the history of a local gonococcal infection, the spiking temperature curve, the progressive anemia, the leukocyte count, the gonococcus complement fixation test, a positive blood culture and the localized areas of purpura indicating embolic phenomena. A positive blood culture may be obtained at times. One case showed unmistakable evidence of gonococcal septicemia at post-mortem examination, yet repeated blood cultures had been sterile. Unless these lesions are kept in mind by the clinician in suspected cases of gonococcal septicemia they may easily be overlooked. At times less than half a dozen may be present, and in rare instances because of the lack of a bright red color and the presence of a brownish tinge they may be confused with lentigo.

Sulfanilamide—Millett reports a case of type 3 pneumonia involving one lobe twenty-four hours after onset. The patient was given 1 Gm of sulfanilamide on the third day. The next morning there were signs of frank consolidation in the left upper lobe with bronchial breathing and whispered pectoriloquy. Thirty-one hours after the institution of sulfanilamide therapy the temperature had dropped from 104.2 to 99.4 F. For the next two days the temperature averaged 100 F and then dropped to normal. Sulfanilamide was continued until another 15 Gm had been given, a total of 25 Gm in about three and one-half days. The only untoward effect noted was a moderate cyanosis of the lips, which persisted until discharge, on the morning of the tenth day.

Public Health Reports, Washington, D C

52 1403 1440 (Oct 8) 1937

Use of a Dark Adaptation Technic (Biophotometer) in Measurement of Vitamin A Deficiency in Children C E Palmer and H Blum berg—p 1403

Studies on Chronic Brucellosis II Description of Technics in Specific Tests Alice C Evans—p 1419

52 1441 1472 (Oct 15) 1937

Dermatitis Among a Group of Office Workers Found Not to Be of Occupational Origin L Schwartz and M B Sulzberger—p 1441

Studies on Infection of Dogs with Trophozoites of *Endamoeba histolytica* by Oral Route Preliminary Report J C Swartzwelder—p 1447

Progress in Oyster Conditioning Report of Experiments at the Demonstration Plant Norfolk, Va R Messer and G M Reece—p 1451

*Treatment of Malaria with Sulfonamide Compounds A Diaz de Leon—p 1460

Treatment of Malaria with Sulfonamide Compounds—Diaz de Leon used sulfonamide in the treatment of fifteen cases of tertian malaria. The results were so completely satisfactory that he believes its antimalarial properties worth further investigation. Sulfonamide would probably be classed with quinine and atabrine, since it was tried only in the benign tertian form. The drug, in tablet form, was taken orally, two tablets after each meal.

Radiology, Syracuse, N Y

29 391 520 (Oct.) 1937

Classification of Mammary Carcinomas to Indicate Preferable Therapeutic Procedures U V Portmann Cleveland—p 391

*Practical Methods of Reducing Cancer Death Rate E H Skinner Kansas City Mo—p 403

*Relation of Heredity to the Occurrence of Cancer Maud Slye Chicago—p 406

Action of Roentgen Rays or Radium on Inflammatory Processes A U Desjardins Rochester Minn—p 436

Roentgen Irradiation of Hypophysis J H Lawrence New Haven Conn W O Nelson Detroit and H Wilson New Haven Conn—p 446

Roentgen Anatomy of Knee Joint Experimental Analysis E Lachmann Oklahoma City—p 455

*Comparison of Gastroscopic and Roentgen Finding R Schindler and F Templeton Chicago—p 472

Value of Gastroscopy in Diagnosis E B Benedict I t n—p 480

Comparative Value of Gastroscopy and Roentgen Examination of Stomach R Schatzki Boston—p 488

Relative Merits of Gastroscopic and Roentgenologic Examination E R Kirklin, Rochester Minn—p 492

Practical Methods of Reducing Cancer Death Rate

Since cancer is a preventable disease Skinner believes that the recognition, knowledge and utilization of the following factors in its diagnosis and treatment will reduce the mortality rate of cancer: the beginning of cancer from a single spot perhaps unicellular, in tissue or organ, chronic or persistent irritation as the most useful and practical causal element in cancer; the early diagnosis and prompt eradication of the lesion by surgery or radiation therapy, biopsy study by pathologists and basing its treatment on tumor grading and sensitivity to radiation. Total surgical excision of cancerous growths is jealously maintained and with a more courageous completeness but the partial extirpation of any cancer is condemned. Surgical cure for intimate radium therapy is a valuable venture. The use of well executed radium therapy for the superficial nodules and metastases to the skin, mouth lip and cervix is universal, but there must be insistence on the use of lethal and homogeneous radiation therapy for comfort and low expense of radium therapy. Radium is increasingly available throughout the world. It occupies a distinct field, especially in malignant states. It may afford relief from pain, delay death, and it continues as a research of increasing merit. Educational propaganda

between that which is professional and that which is popular. The professional appreciation of cancer facts and fancies is far more important than lay education because, if physicians are not practicing the early diagnosis of cancer, what good does it do to advise potential or inquiring patients to consult their physicians?

Relation of Heredity to Occurrence of Cancer—She maintains that, in order to breed out cancer, human records are imperative. The necessity for human records is the same, irrespective of any details of a genetic theory, indeed, they would in time prove the correctness or the error of any genetic theory, and they would be the court of last appeal. Any step actually to breed out cancer may lie far ahead, but the glory will be to those who actually do it, and when it is done it will be a routine procedure. If specific types and sites of tumor can be ruled out of mouse families, they can be ruled out of human families. This future procedure can be made possible by the simple method of taking adequate records now and assembling them in a central bureau where they can be of service. A study of such human records would show the attending specialist the probable type of diseases to be expected in a family as the result of ancestry, the meaning of symptoms, sometimes fatally hard to ascribe to their cause but which have been presented before in the family, the probable reaction to types of treatment, and the probable prognosis. These things the author can predict in her mice from knowledge of the family records. This pre-knowledge of probable diseases, reactions and prognosis within a family would, she thinks, if it were universally at the command of practitioners, revolutionize medicine, since one should then know something not only about the disease and its treatment of choice but also about the patient.

Comparison of Gastroscopic and Roentgen Observations—Schindler and Templeton declare that gastroscopic and roentgenologic studies should be considered as cooperative rather than competitive examinations. Either method may visualize lesions that the other cannot. Shape, contour, motor function and gross lesions are better seen roentgenologically, while mucosal changes and smaller lesions are better seen gastroscopically. In most cases the roentgenogram of the gastric mucosa bears little resemblance to the patterns seen by the gastroscopist, and sometimes changes clearly discernible at repeated gastroscopic examinations may be entirely undetectable by the roentgenologist. Conversely, the roentgenologist sometimes sees changes that are invisible to the gastroscopist. The frequent failure of the gastroscopist to see radiating folds of the sort so often seen roentgenologically in cases of gastric ulcer suggests that these folds are not true rugae but, instead, wrinklins caused by changes in the submucosa or the muscularis. This may explain why roentgenologists sometimes see thickened folds in atrophic gastritis, a condition often marked by thickening of the submucosa beneath the atrophic mucosa. Obviously, gastroscopy is best suited to the study of the mucosa, roentgenology to the study of the deeper gastric tissues.

Science, New York

86 335 356 (Oct 15) 1937

Can We Abandon the Vitamin Alphabet? C M McCay New York—p 347

Use of Yeast or Other Fungi for Vitamin B₁ Tests R J Williams *Cerealis Ore*—p 349

*First Record of the Black Widow Spider in Minnesota D Denning Minneapolis—p 350

Temperature and the Growth of Hair P Eaton and Mary Wright Eaton Jacksonville Fla—p 354

Vitamin B₁ Craving in Rats C P Richter L E Holt Jr and B Barellare Jr Baltimore—p 354

Cultivation of Viruses on Chorio Allantoic Membranes of Chick Embryos Rachel E Hoffstadt Elizabeth Osterman and K S Pilcher Seattle—p 356

The Black Widow Spider in Minnesota—Denning points out that the black widow spider has been found in southeastern Minnesota. Three female specimens were taken, at points a few miles from one another. All were found on the sun-baked sides of hills, where they had built an irregular web about a protruding stone. A method by which the black widow may become further distributed is shown in the finding of male *Latrodectus mactans* at Hallock, Minn., the spider having been carried from Mississippi in a truck load of bales.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Dermatology and Syphilis, London

49 409 464 (Oct.) 1937

- Industrial Dermatitis and the Workmen's Compensation Act H MacCormac—p 409
- Id R D Gillespie—p 422
- Industrial Dermatitis from the Legal Standpoint A G E Hill—p 427
- John Evelyn's Account of Case of Dermatitis Ficta H G Adamsoo—p 435

British Journal of Experimental Pathology, London

18 345 422 (Oct.) 1937

- Effects of Diets Low in Choline on Liver Function, Growth and Distribution of Fat in White Rat D L Maclean J H Ridout and C H Best—p 345
- *Observations on Plasma Lipoids in Various Types of Lipemia with Especial Reference to Renal Disease Freda K. Herbert—p 355
- Effect of Toxemia on Metabolism of Liver Diphtheritic Toxemia and Carbohydrate Synthesis M C A Cross and E Holmes—p 370
- Artificial Opsonization of Bacteria Part II J Gordon and F C Thompson—p 390
- Sericate and Silica Experimental Dust Lesions in Rabbits S L Cummins—p 395
- Metabolism and Action of Dihydroxyrosine and α -Benzoyldihydroxyrosine I Snapper and A Grunbaum—p 401
- Assay of Staphylococcus Antitoxin by Hemolytic Method W A Timmerman—p 406
- Antibacterial Immunity to Staphylococcus Pyogenes C Lyons—p 411

Plasma Lipoids in Lipemia—With the thought that a study of the proportions of the various lipoids in the plasma would indicate the stage at which accumulation occurred, Herbert performed such analyses in eight normal subjects, seven cases of renal edema, one case of lipemia in the terminal stage of chronic nephritis, one case of nondiabetic xanthoma and one case of gross diabetic lipemia with xanthoma. The normal values for the various lipoids fall within the accepted normal ranges, except in the case of glyceride, for which low values were obtained. The iodine values of the separated fatty acids normally range from 79 to 124, with an average of 105. In lipemia associated with renal edema, all the lipid fractions are increased, the glyceride forms a larger proportion of the total than normally, the free cholesterol and cholesterol ester form about the normal proportion of the total lipoids, and the phospholipin is relatively decreased. In one case in which kidney lipoids were analyzed there were extensive deposits of cholesterol ester in the kidneys in the absence of any significant increase in plasma lipoids. The case of nondiabetic xanthoma showed a type of lipemia similar to that found in renal edema. In gross diabetic lipemia, when the glycerides form a very large proportion of the total lipoids, the iodine values of the separated fatty acids tend to be low. In general it seems that many pathologic lipemias of moderate degree show similar changes. The lipoids in circulation probably represent a mixture of those mobilized from reserve stores and those mobilized from the liver.

British Medical Journal, London

2 689 730 (Oct. 9) 1937

- Hemorrhagic States L J Witts—p 689
- Clinical Pathology of Hemorrhagic States S C Dyke—p 692
- Prontosil and Similar Compounds in Treatment of Puerperal Hemolytic Streptococcus Infections G F Gibberd—p 695
- Otitis Externa I G Brown—p 698
- Buttonholed Extensor Expansion D L C Bingham and E A Jack—p 701
- Protection of Skin Against Lime G C Pether—p 702

Journal Obst & Gynaec of Brit Empire, Manchester

14 821 996 (Oct.) 1937

- Investigations into Transit of Ova in Man A Westman—p 821
- *Menstrual Periodicity Statistical Observations on Large Sample of Normal Cases D L Gunn Penelope M Jenkin and Alistair L. Gunn—p 839
- Granulosa Cell Tumors of the Ovary Review of the Literature Freda Bury Pratt—p 880

Menstrual Periodicity—The Gunns and Jenkin collected menstrual data from normal women by a postal method in which tests of reliability were possible. The 770 women providing periodicity data were divided into (1) 209 reliable (2)

270 fairly reliable and (3) 291 unreliable subjects. They find that 90 per cent had an average interval between the onsets of successive menstruations lying between twenty-five and thirty-six days inclusive, 3 per cent had an average of thirty-seven days or more and 7 per cent an average of less than twenty-five days. Only about 2 per cent had an average of less than twenty-four days. The average interval did not show any predilection for whole weeks. The average for all cases in sections 1 and 2 was twenty-nine \pm 0.19 days, the commonest averages lay between twenty-six and twenty-nine days. No instances were found that did not vary by at least 275 days between the shortest interval and the longest. The duration of one interval is not influenced by the duration of its predecessor. Among the professional classes which composed the series, a correlation between occupation and average interval was absent. Marriage did not appear to affect the periodicity. There was a progressive decrease in the average interval with increasing age amounting to one day in five or six years. There was no tendency for the interval to vary with the seasons of the year. There appeared to be a slight tendency for menstruation to start in the latter part of the working week. No connection could be detected between menstruation and the moon in the data of more than 10,000 menstruations.

Journal of Tropical Medicine and Hygiene, London

40 221 236 (Oct. 1) 1937

- Pellagra in Egypt 1936 1937 Notes A Clark—p 221
- Morphology and Biology of Actinomyces Israeli (Kruse 1896) P Negroni and H Bonfiglioli—p 226
- Luetic Pseudocysticercosis A Castellani—p 232

Lancet, London

2 723 780 (Sept. 25) 1937

- Function of Tonsils and Their Relation to Etiology and Treatment of Nasal Catarrh I Griffiths—p 723
- Histamine-like Activity of Blood C F Code and A D McDonald—p 730
- Pertussis Endotoxin in Treatment of Whooping Cough A R Thompson—p 733
- Intermediate Metabolism of Carbohydrates H A Krebs—p 736
- Effect of Succinic Acid on Diabetic Ketosis D M Dunlop and W M Arnott—p 738
- Subcutaneous Emphysema in Diphtheria A H G Burton and J H Weir—p 740

Medical Journal of Australia, Sydney

2 499 542 (Sept. 25) 1937

- Cerebral Arteriosclerosis A Review W S Dawson—p 499
- The Spirit of Adventure F W Jones—p 506
- Role of Physiotherapeutics in Treatment of the Paralyzed S Sunderland—p 512
- In What Position Shall We Place the Fractured Limb? C Craig—p 519

Japanese Journal of Obstetrics & Gynecology, Kyoto

20 437 558 (Sept.) 1937

- Malignant Tumor and Tuberculosis Parts I to IV S Imamura—p 438
- Study on Radiosensitivity of Tissues S Yunoki—p 461
- Experimental Study on the Effect of Vitamin B on Female Genitals Experiments I to VIII T Hashimoto—p 484
- Effect of Heat and Ultra Short Wave Rays on Radiosensitivity Parts I to IV M Mikawa—p 515
- Experimental Study on Effect of Iodides on the Growth and Radiosensitivity of Malignant Tumor Parts I to III H Ito—p 536
- *Effect of Vitamin C on Coagulability of Rabbit Blood N Terazawa K Takeda and K Mizoguchi—p 550
- Statistical Study on Ectopic Gestation in Special Reference with the Ages H Kagami—p 554
- Pregnancy After Treatment for Hypoplasia Uteri with Ovarian Follicle Hormone of High Units Case M Oshima—p 557

Effect of Vitamin C on Coagulability of Rabbit Blood—To determine the origin of the hemostatic mechanism of vitamin C, Terazawa and his associates studied its effect on the coagulation of rabbit blood. Vitamin C accelerated the coagulation time of rabbit blood and the change in blood elements that is, the increase of blood platelets, fibrinogen and thrombin probably participated in this hemostatic mechanism of the vitamin. Originally this hemostatic mechanism is initiated by a change in the nature of the blood or owing to the accelerated coagulation time by a stimulation of the hemopoietic organs or by the effect on the vascular walls themselves. Vitamin C had action on the former two.

Archives des Maladies de l'Appareil Digestif, Paris

27 801 904 (Oct.) 1937

Gastric Diverticula P Hillemand J Garcia Calderon and Artisson
—p 801

Chronic Intestinal Amebiasis J Baumei—p 833

*Decaffeinated Coffee and Denicotinized Tobacco in Gastric Diet P
Bernay and G Faure—p 865

Decaffeinated Coffee and Denicotinized Tobacco in Gastric Diet—Bernay and Faure point out that in patients with gastric ulcer, hyperchlorhydria, hypersecretion, gastralgia and even hypochlorhydria, it is often necessary to forbid coffee and tobacco on account of their stimulating action on the gastric secretion. Patients who have been told to abstain from coffee and tobacco ask whether they are permitted to substitute decaffeinated coffee and denicotinized tobacco. To decide this question the authors made tests on the gastric secretion and reached the conclusion that tobacco is a powerful stimulant of the gastric secretion. The figures obtained in the tests with tobacco are comparable and even superior to the figures obtained with the test meal. Denicotinized tobacco produces practically the same results. Tests with denicotinized tobacco revealed rather high values of hydrochloric acid and large volumes of gastric juice, but its action seemed less regular than that of ordinary tobacco. Decaffeination, no matter to what extent, does not suffice to suppress the stimulating action of coffee on the gastric secretion. The figures obtained with decaffeinated coffee are generally comparable to those produced by ordinary coffee or by the test meal. To forbid the use of coffee, even of decaffeinated coffee, is thus well founded and to forbid the use of tobacco, denicotinized or not, is no less justified in patients with gastric ulcers and with hypersecretion. It is necessary to forbid the use of tobacco to all dyspeptic persons, when fasting or between meals, because it leads to an acid secretion that exhausts at the wrong time the secretory potentialities of the stomach. However, for patients with hyposecretion, coffee and tobacco remain permissible only after a meal.

Gazette Médicale de France, Paris

44 821 884 (Oct 15) 1937

Male Hormone Therapeutic Indications and Results L de Gennes
and R Roge—p 821Variations of the Histophysiology of Female Genitalia R Courrier
—p 829*Contribution to Study of Blindness of Hypophyseal Origin. Four Cases
of Adiposogenital Syndrome with Retinal Degeneration and Mental
Backwardness P Pesme and G Hirtz—p 833Hypophysis, Thyroid Parathyroid Genital Glands Adrenals Hormones
and Hormone Regulations J Sigwald—p 839

Blindness of Hypophyseal Origin—Pesme and Hirtz recently observed four cases of a curious hereditary and familial syndrome that is characterized by adiposogenital dystrophy with mental backwardness and retinal degeneration. The authors describe these cases not only because of their rarity but also because they show the role of the hypophysis in the development of the syndrome and particularly the ocular lesions. The authors direct attention to the similarity of the disorder to the Lawrence-Biedl syndrome. The described cases differ from those designated as the Lawrence-Biedl syndrome by the absence of malformations of the members (syndactylism or polydactylism). There seem to be three symptoms that characterize the typical as well as the atypical cases: obesity of the hypophyseal type, mental backwardness and retinal disorders. The retinal symptoms are especially noteworthy in all cases: there was a degeneration of the retina with discoloration and hemeralopia. One of the patients was given extracts of the entire hypophysis for a year, but this form of treatment failed to produce the slightest improvement. After a new examination it was decided to treat the patient with extract of the anterior lobe of the hypophysis and with several other glandular extracts (thymus, thyroid, adrenals and total hypophysis). Under the influence of this treatment the patient lost weight and increased in height, moreover, the genitalia developed normally and the hands and fingers, which had been contracted and deformed, assumed a normal shape and the nails lost their imbricated appearance. All aspects likewise changed in that the patient became active and bright. Even more remarkable was the improvement of the ocular defects. The boy was able to read and to write.

being disturbed by nystagmus and the photophobia disappeared. Measurement of the visual acuity revealed hardly any increase but the boy was better able to utilize his visual powers. On the basis of this observation, the authors conclude that the hypophysis influences not only the fat metabolism and the development of the genital organs but also the retina. Such a relationship between the retina and the hypophysis had already been suggested by other investigators and the authors think that treatment with hypophyseal hormones may perhaps prove valuable in some congenital retinal defects.

Revue Medico-Sociale de l'Enfance, Paris

5 321-400 (Sept Oct.) 1937

Role of Family in Emotional and Moral Development E Pichenet
—p 321

*Rapid and Economic Method of Delousing C Lebaillly—p 335

Adenoid Growths and Otitis M Levy Dekker—p 341

Does the Rural Physician Require Assistance Mlle Abricossouff—p 34

Reflections on Psychology of Sick Infants Who Are Away from Home
Arlette Butavand—p 350

Aspects of Motility During Early Infancy Gundes—p 354

Rapid and Economic Method of Delousing—To destroy body lice Lebaillly places the infested person, dressed in a shirt and the trousers loosened at the waist, into a specially constructed cabinet. All the clothing and the personal belongings of the person are likewise placed in the cabinet. Even the head is enclosed in a covering that is attached to the cabinet, but the eyes, nose and mouth are left free. After the cabinet has been closed and the head covering properly adjusted, sulfur is ignited in the cabinet. The sulfur anhydride vapors that develop penetrate everything in the cabinet. After all the oxygen in the cabinet has been consumed by the combustion, the sulfur is extinguished but the cabinet is left closed for twenty minutes. At the end of this period all parasites are dead and the person can be taken out of the cabinet, but in order to prevent the escape of a cloud of suffocating gas it is first suctioned off, which requires about four minutes. The garments are shaken in the air and then the patient can dress himself again. The entire procedure requires about thirty-five minutes and the expense is about 1 franc (4 cents). It is absolutely necessary to repeat the procedure eight days later, for the eggs that were laid just before the sulfur treatment are hatched six days later and the new lice must be destroyed. This method of delousing does not damage the garments, and the persons treated in this manner made no complaints. The author recommends the method for use in hospitals, night shelters and welfare stations, particularly if there is danger that diseases such as recurrent fever or exanthematous typhus might be propagated by the lice. In persons who have only head lice, the use of the cabinet is unnecessary. The author constructed a special helmet, which leaves the eyes, nose and mouth free but closes tightly about the face and neck. This helmet is inflated with sulfur anhydride vapors through a tube that is connected with a generator of the gas. The helmet is left on for twenty minutes. After eight days the treatment is repeated. The author suggests that the treatment be given outdoors, perhaps in the school yard. He considers this method of destruction of head lice especially valuable for schools and summer camps.

Boil d Istit Sieroterap Milanese, Milan

16 551 638 (Sept.) 1937

*Action of Thyroid Hormone on Phenomena of Antibacterial Immunity
and Anaphylaxis G Rocchini—p 551Specific Hyperreceptivity to Infections Further Work. A Zironi—p
565

Staphylococci Anatoxin General Study I Peragallo—p 587

Mechanism of Immunity in Vaccinal Infection Immunization by Nor

Infectious Virus F Magrassi and F Muratori—p 598

Influence of Transfusion of Formalized Heterogenous or Homogeneous

Blood on Regeneration of Blood Crisis in Anemic Rabbits O M

Valeri—p 620

Action of Thyroid Hormone on Immunity—Rocchini gave guinea pigs subcutaneous injections of antityphoid vaccine either alone or combined with extract of total thyroid. He found that the thyroid extract simultaneously administered with the vaccine stimulates the production of specific antibodies (agglutinins). The agglutinating power is higher in the blood serum of animals which are given the thyroid extract than in

the controls, but the former are less resistant than the latter to the development of infection induced by the inoculation of living and virulent typhoid bacilli. The thyroid treatment does not stimulate the skin sensitivity to intradermal reactions to killed typhoid bacilli.

Polinico, Rome

44 501 560 (Oct 15) 1937 Surgical Section

Subphrenic Extraperitoneal Abscess in Cholecystitis Case C Carli —p 501

Experimental Nephrotomy and Renal Resection D Ciddio —p 510

*Influence of Block of Reticulo-Endothelial System on Some Inorganic Elements in Blood G Cosentino —p 520

'Diffuse Contusion of Brain in Irradiated Fractures at Base of Cranium Experiments F De Leo —p 531

Alcoholization of Splanchnic Nerve and of Thoracic Sympathetic Ganglions in Treatment of Hypertension P Valdoni —p 538

Retractile Mesentery Case of Inflamed Diverticulum of Jejunum A Zagami —p 550

Blocking the Reticulo-Endothelial System—Cosentino blocked the reticulo-endothelial system of rabbits by intracardiac injections of 2 cc each of a 1 per cent solution of trypan blue in physiologic solution of sodium chloride. One injection was given every other day up to ten injections. The amount of calcium, phosphorus and magnesium in the serum of cardiac blood was determined before, during and after the induction of the block of the reticulo-endothelial system. The animals as well as the controls were kept in the same conditions of environment and diet before and in the course of the experiment. The stain did not seem to be highly toxic. The conjunctiva and then the skin turned blue. Hypercalcemia, hyperphosphatemia and hypomagnesemia appeared early in the experiment and increased as the block of the reticulo-endothelial system increased.

Radiologia Medica, Milan

24 811 906 (Oct) 1937

Roentgenogram of Pulmonary Tuberculosis in Children A Piergrossi —p 811

Morphologic Evaluation of Heart of Athletes by Tridimensional Roentgen Method L Guardabassi —p 843

*Roentgen Treatment of Diabetes Insipidus P Cignolini —p 870

Tumor of Lung in Marie's Disease Roentgen Study of Case F Carillo —p 879

Abnormalities of Transverse Process of First Dorsal Vertebra A Graziani —p 889

Roentgen Irradiations in Diabetes Insipidus—Cignolini's treatment consists of three series of roentgen irradiations, which are given on the anterior and posterior regions of the knee joints (with the legs placed together during the treatment), the right hip and shoulder joints and the left hip and shoulder joints. Each series consists of ten treatments, each of which is given daily on one of the different fields to be irradiated. The dose varies from 160 to 200 roentgens administered through a filter of 0.5 mm of zinc and 2 mm of aluminum. Larger doses may induce nausea. Drugs and hypophysis extracts are not administered in the course of the treatment. The ovaries, thoracic organs and head are protected against the irradiations. The best results of the treatment are obtained when it is given in association with short wave irradiations, either over the hypophysis or the ovaries or sometimes on the breast. The short wave treatment is given daily for twelve minutes until the number of applications has reached ten, thirteen and twenty during the first, second and third roentgen series, respectively. At the end of the first series of roentgen treatments, polyuria is greatly diminished. At the end of the entire treatment it is normal and it remains so after discontinuation of the treatment. Four or five months should elapse between the first and second treatments and one or two months between the second and the third (last) treatment. There are no late complications, such as cutaneous lesions and anemia. The author reports a case in which a woman suffered from a neurohypophyseal syndrome (obesity, amenorrhea and diabetes insipidus). Diabetes was grave and had not improved under different treatments. The associated roentgen and short wave treatment induced spontaneous reappearance of menstruation with a normal cycle and controlled polyuria. The satisfactory results of the treatment persist at the present time more than a year after discontinuation of the treatment.

Prensa Medica Argentina, Buenos Aires

24 2001 2044 (Oct. 20) 1937

Intrathoracic Ganglioneuroma Case E L. Lanari, R Pardo and J A Aguirre —p 2001

Surgical Treatment of Pharyngo-Esophageal Diverticula J Diez —p 2008

*Variations of Venous Blood Pressure After Ingestion of Water P Audap-Soubie —p 2020

Heart and Vitamin B L de Soldati —p 2029

Human Life in High Altitudes O A Palma —p 2032

Variations of Venous Blood Pressure—Audap-Soubie made determinations of the venous blood pressure in a group of patients who had normal cardiovascular and renal apparatus, with the exception of one who had heart disease. The determinations were made on patients with a fasting stomach after administration of 1,000 or 1,500 cc. of water. According to the author there is not a "standard" figure for the venous blood pressure, which is different in each case and changes at different times and on different days. It changes also after ingestion of water or liquid food and follows the curve of elimination of liquids. In the majority of cases the figures of the venous blood pressure are higher than those of the maximal arterial blood pressure. The figures in the former are given in millimeters of water, whereas those in the latter are given in millimeters of mercury. According to the author it is advisable to make the determinations of the venous blood pressure in patients with fasting stomachs for a more uniform evaluation of the results.

Klinische Wochenschrift, Berlin

16 1369 1408 (Oct 2) 1937 Partial Index

Bacterial Ferments and Their Relation to Pathogenesis and Course of Disease T Wohlfel —p 1369

Food Rhythm of Blood Picture R Greving and H Regelsberger —p 1374

*Increase in Rest Nitrogen During Diabetic Coma K Gopfert —p 1380

*Question of Quantitative Difference in Action of Antirachitic Vitamins D and D₂ in Nurslings H Brockmann —p 1383

Bilirubinemia After Water Tolerance Test in Patients with Heart Disease With or Without Decompensation L Stanojevic and Radmila R Arandjelovic —p 1386

Chemical Processes in Normal and Pathologic Muscle S Grzycki and W Guca —p 1387

Tongue and Gastric Ulcer L von Friedrich —p 1390

Increase in Rest Nitrogen During Diabetic Coma—Gopfert says that among the complications which may develop in the course of diabetic coma there are several which have been ascribed to a disorder in the renal activity. He mentions several of these symptoms but points out that they almost never occur together and that the one or the other develops without noticeable regularity. He thinks that this factor makes it improbable that renal insufficiency is the only cause, for, if such is the case, a greater uniformity in the symptomatology would exist. He is inclined to assume that renal defects, circulatory disturbances and metabolic anomalies work together and that, depending on the predominance of the one or the other, different symptoms predominate. The eliciting factor of albuminuria, cylindruria and hematuria is an impairment of the uriferous tubules, which in turn is caused by the elimination of the large quantities of ketone bodies. As is proved by necroptic studies on patients who died in diabetic coma, the glomeruli do not undergo changes. Thus there is no justification for ascribing an increase in nitrogen rest, which is observed in many cases of diabetic coma, to an insufficiency in the excretory apparatus of the kidney. If, in case of normal renal function, fluctuations of the rest nitrogen occur during diabetic coma, fluctuations in the blood sugar usually exist simultaneously because rest nitrogen and dextrose originate in the same source, that is, in the transformation of protein into dextrose. In this case the increase in rest nitrogen is the result of a complete depletion of the glycogen depots of the organism. If, however, during the diabetic coma there develops an increase in the rest nitrogen without simultaneous increase in blood sugar, a complicating renal defect exists which has impaired the renal function.

Difference in Action of Vitamin D₂ and D₃—Brockmann says that numerous experiments have been made in order to solve the problem of identity of the antirachitic vitamin in cod liver oil with that of irradiated ergosterol. In rachitic rats

these two substances showed identical therapeutic effects, whereas in rachitic chickens they did not. Although it had been assumed that the active factors in cod liver oil and in irradiated ergosterol are different chemically, the definite proof for this had not been furnished until recently, when Windaus and his collaborators clarified the nature of vitamin D₂ and isolated vitamin D₃ from certain fish oils and identified it with the D₂ which is prepared from cholesterol. Since animal experiments had demonstrated the therapeutic superiority of vitamin D₂ over vitamin D₃, the author decided to try vitamin D₂ in rachitic infants. He reports his observations on twenty-one rachitic infants. The vitamin D₂ was given in doses amounting to about half of those given in medication with vitamin D. The therapeutic results demonstrated the superiority of vitamin D₂ over vitamin D₃.

Zentralblatt für Gynäkologie, Leipzig

61 2305 2368 (Oct. 2) 1937

Physiology of Stomach During Pregnancy R Hansen—p 2306

*Dioxyacetone and Hepatic Function During Pregnancy H Dietel—p 2314

*Significance of Ketonuria in Hyperemesis Gravidarum H Ohligmacher—p 2318

Studies on Heredity in Plants After Roentgen Irradiation P Hussy and S Schwere—p 2324

Primary Nonpuerperal Pneumococcal Infections of Female Genitalia K Wirth—p 2327

Primary Abdominal Pregnancy K Jaroschka—p 2331

Dioxyacetone and Hepatic Function During Pregnancy

—Dietel says that various functional tests have been recommended to determine disturbances in the hepatic function during pregnancy. In a former report he described comparative examinations with a number of the functional tests of the liver, which proved that the tests produce contradictory results. Of the tests for the carbohydrate metabolism, the galactose tolerance test proved to be the most reliable for clinical purposes. However, Wachstein and Eppinger believe that the tolerance test with dioxyacetone is an even more reliable hepatic test. The author decided to make the dioxyacetone tolerance test in women who were free from hepatic disturbances and who were not pregnant and in another group of women who were pregnant. He found that, following a tolerance test with 40 Gm of dioxyacetone, pregnant women often show a slightly higher dioxyacetone content of the blood than do women who are not pregnant. However, the pregnant women do not show pathologic values or, if such values do occur, a repetition of the test generally reveals a normal reaction. Thus in the majority of pregnant women the dioxyacetone test gives no indication of the existence of a hepatic impairment.

Hyperemesis Gravidarum—Ohligmacher reports observations on ketonuria in hyperemesis gravidarum. The development of the ketonuria indicates an inadequate supply of carbohydrates. The intake of sufficient amounts of carbohydrates is of great importance in pregnancy and particularly if hyperemesis develops. The daily examination of the urine of patients with hyperemesis gravidarum for the presence of ketone bodies makes it possible to supervise the adequate intake of carbohydrates. For this reason it is indispensable in the treatment of such patients.

Wiener klinische Wochenschrift, Vienna

50 1411 1442 (Oct. 15) 1937 Partial Index

Heredity of Skin Diseases H Fuhs—p 1411

*Experiences with Ninhydrin for Demonstration of Cancer in Serum O Weiss—p 1416

Paget's Osteitis Deformans Hilda Kallberg—p 1417

Prophylactic and Therapeutic Significance of Respiratory Exercises R Eisenmenger—p 1419

Combination of Starvation Edema with Pellagra K T Chlow—p 1422

Glutamic Acid as Substitute for Sodium Chloride F Mainzer—p 1423

Ninhydrin for Demonstration of Cancer in Serum

Weiss says that the ninhydrin reaction for cancer was introduced by Lehmann-Facijs and Witting in 1934. Serum is withdrawn from the fasting patient at a preparatory trial conditions, combined with normal serum from a healthy and incubated. Then the coarse molecular products are precipitated by boiling with 96 per cent alcohol. The cleavage products (for instance tumor products) are precipitated and can be demonstrated in the filtrate by the ninhydrin

(blue color reaction). Weiss employed this test in 447 cases, 178 patients with carcinoma, thirteen with sarcoma, fifteen with other tumors and 241 without malignant growths. He reaches the conclusion that the ninhydrin reaction according to Lehmann-Facijs is a relatively simple method for the demonstration of cancer. About the reliability of the test he says that in 178 cases of carcinoma it failed thirty times, that is, it produced correct results in 83.1 per cent of the cases. In the cases without carcinoma, the results were 86.4 per cent correct.

Polska Gazeta Lekarska, Lwow

16 801 820 (Oct. 17) 1937

Liver Tolerance Test with Dextrose J Billewicz Stankiewicz—p 801

*Electrocardiogram in Experimental Poisoning with Bacterial Toxin H Weber—p 804

Tuberculosis of the Breast Sallie Hoben—p 807

16 821 840 (Oct. 24) 1937

Bordet Wassermann Reaction and M T R S K O and S W II

Reaction S Slopek—p 821

Syphilis of Blood Vessels Disappearance of Pulse Agranulocytosis During Treatment Case F Turyn and L Cymbalista—p 823

*Electrocardiogram in Experimental Poisoning with Bacterial Toxin II Weber—p 825

Electrocardiogram in Experimental Poisoning—For his experiments Weber used the toxins of diphtheria, *Bacillus botulinus* and tetanus. He injected subcutaneously or intravenously 1 cc doses of diphtheria toxin in dilutions of 1:50, 1:100, 1:200 and 1:1,000 in sixteen rabbits, intravenously 1 cc doses of *Bacillus botulinus* toxin in dilution of 1:200 in eight rabbits and 1 cc doses of tetanus toxin in dilution of 1:50 and 1:100 in a large number of rabbits. Each time the dilutions were freshly prepared. Electrocardiograms were taken every day. The experiments show that tetanus toxin has no toxic influence on the cardiac muscle. In experimental poisoning diphtheria toxin causes marked changes in the electrocardiogram showing damage to the system of conduction in all its segments, most often the signs of toxic damage to the heart are reduced to an increase of the R, followed by the appearance of preponderance of the left ventricle and by branch block. The *Bacillus botulinus* toxin exerts a damaging action on the sinus node and sino-auricular conduction. The tetanus toxin does not produce distinct changes in the electrocardiogram. Administration of vitamin C has no special influence during the period of poisoning with diphtheria toxin and with *Bacillus botulinus* toxin.

Norsk Magasin for Lægevidenskapen, Oslo

97 1273 1368 (Dec.) 1936

*Roentgen Treatment of Malignant Lymphogranulomatosis J Frimann Dahl—p 1273

Determination of Cevamic Acid in Some Foodstuffs K T Utthem—p 1288

Lentigo Maligna or Precancerous Melanosis Case T Denstad—p 1299

Relation of Aluminous Substances in Spinal Fluid in Neurologic Diseases and Comparison Between Results of Kafka's and Bisgaard's Methods R Strømme—p 1303

Some Nitrogen Determinations in Cerebrospinal Fluid R Strømme—p 1310

Unusual Compression of Spinal Cord Chondroma (?) in Mediastinum H Sæthre—p 1314

Xanthomatosis and Sudden Death Supplement to Report in Norsk Magasin for Lægevidenskapen 1936 p 695 F Harbitz—p 1317

Alcohol and Accidents E Poppe—p 1321

Roentgen Treatment of Malignant Lymphogranulomatosis—Frimann-Dahl says that, while malignant lymphogranulomatosis may be acute, more benign cases also occur with duration of life for years. Cases of actual recovery are doubtful. The average length of life is three years. Roentgen irradiation has a pronounced tendency to prolong life. The shorter the duration of the disease before roentgen treatment is instituted, the longer the life expectancy, the younger the patient and the better his general condition, the more favorable the prognosis probably is. Both local and general roentgen treatment may be effective even when there are large tumor masses. The patient's general condition may be improved and he may be made capable of work for months and years. Recurrences, however, are inevitable, and with every recurrence the treatment becomes less effective. Because of the relatively marked differences in the length of life according to international statistics, the author suggests that perhaps the course of malignant lymphogranulomatosis differs in different countries.

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THE DIAGNOSIS AND TREATMENT OF CIRRHOSIS OF THE LIVER IN ITS EARLY STAGES

CLINICAL LECTURE AT ATLANTIC CITY SESSION

THOMAS P. SPRUNT, M.D.
BALTIMORE

The intensive research dealing with the liver during the past two decades has added greatly to our knowledge of the physiology of this important structure. It has emphasized the protean nature of its activities as well as its extraordinary powers of reserve and of regeneration. In certain striking particulars this knowledge has been translated into a great increase in our clinical power, notably in the development of liver extract in the treatment of pernicious anemia. It has taught a great deal about acute diffuse diseases of the liver, and physicians are beginning to acquire more definite knowledge of that important chronic disease cirrhosis, but clinicians as yet have done little to improve their diagnostic acumen regarding the early stages of cirrhosis, in which treatment may be more effective.

In spite of increased knowledge of physiologic chemistry, the most valuable clinical data for the diagnosis of hepatic diseases are still to be obtained by a painstaking clinical history, a careful physical examination and other relatively simple methods of bedside observation. It has been pointed out repeatedly that the most obvious evidences of disease of the liver have to do with the excretion of bile, with its relation to the portal circulation and with its variability in amount. Hence the pathologic factors of jaundice, of portal obstruction and of variations in size, consistency and shape of the liver loom up importantly in bedside examinations and observations.

In many typical cases such methods will suffice, but in other cases the difficulties of differential diagnosis or the wish to make earlier diagnoses has made highly desirable the development of reliable tests of the functional capacity of the liver. Its multiplicity of functions, however, its wide functional interrelationships with other organs and tissues and its great reserve power have handicapped greatly a favorable consummation of this desire. Certainly no single, all-embracing test need be expected. Of the many methods that have been devised to test each of the known functions of the liver, only a few have come into anything like general use, and of these perhaps the more valuable in the diagnosis of cirrhosis of the liver are certain of the excretory tests.

DIAGNOSTIC FACTORS

A brief review of important diagnostic factors may not be amiss.

Jaundice—One of the most important clinical signs of hepatic disease is jaundice, and the study of its pathogenesis has been instructive and stimulating. The rudiments of the present conception may be briefly stated as follows. Bilirubin, derived from hemoglobin, is brought in the circulation to the liver cells, which excrete it along with other constituents of the bile into the bile canaliculi, whence it passes down the bile passages into the intestine. Here it is changed to urobilin or to urobilinogen, a part of which is absorbed, carried back to the liver and excreted again into the bile. When the excretory function of the liver is depressed the urobilin often accumulates to some extent in the blood stream and may be excreted by the kidneys into the urine. Urobilinogenuria is hence regarded as an indication of depressed activity on the part of the liver. Rich¹ has emphasized the division of jaundice into two main types, retention jaundice and regurgitation jaundice.

In retention jaundice the bilirubin circulating in the blood stream may not all be excreted by the liver cells and accumulates in the blood. Under these circumstances the bilirubin seems to be bound in some way, perhaps to the plasma proteins, gives an indirect van den Bergh reaction and does not pass through the kidneys into the urine (acholuric jaundice). Retention jaundice associated with milder forms of injury to the liver, cloudy swelling or atrophy of cells, is due to an increased formation of bilirubin, together with a depressed excretory function of the liver, due in turn to different factors, particularly to anoxemia and to fever. This milder type of jaundice and of hepatic injury is associated with such diseases as the hemolytic anemias, congestive heart failure, malaria and lobar pneumonia, in which the injury to the liver and the retention jaundice are comparatively insignificant features of the illness.

In regurgitation jaundice, on the other hand, the bilirubin is excreted by the liver cells and then, through rupture of the bile canaliculi, escapes into the tissue spaces and blood sinusoids of the liver by reason either of obstruction of the larger bile ducts or of necrosis of the liver cells. In this case, not only bilirubin but whole bile gets into the blood stream. The bile pigment now is not bound, it gives a direct van den Bergh reaction and it is readily excreted by the kidneys into the urine (choluric jaundice). This is the type of jaundice associated with the major acute hepatic disorders and with biliary cirrhosis. Either type of jaundice may occur in the common portal cirrhosis. The careful observation of the occurrence of bile pigments in the tissues, in the

Read in the Medical Division of the General Scientific Meetings at the Eighty-Eighth Annual Session of the American Medical Association, Atlantic City, N. J., June 8, 1937.

1 Rich, A. R. The Pathogenesis of the Forms of Jaundice. *Bull. Johns Hopkins Hosp.* 17: 338-377 (Dec.) 1930.

urine and in the intestinal tract and laboratory studies of the qualitative and quantitative relationships of bilirubin in the blood are valuable diagnostic features in hepatic disease

Portal Obstruction and Water Retention—The presence of ascites of even moderate degree and of a palpable spleen are usually obvious clinical conditions. The clinical study of the ascitic fluid, notably of the color, the specific gravity, the albumin content, estimated by means of an Esbach tube, and the cellular content, can be made in the simplest laboratory. In addition to the ascites, or even in its absence, one may find other evidence of portal obstruction in the development of collateral venous channels, dilated veins may be readily visible on the thoracic and abdominal walls, dilatation of hemorrhoidal veins may be noted, although they are not especially common with cirrhosis, and by the use of a thick barium paste esophageal varices may readily be demonstrated by roentgenography. The last-named test may well be performed early in the examination, for a positive result may suggest the inadvisability of passing a stomach tube. The presence of blood in the vomitus or in the stools may indicate the presence of esophageal varices. The marked increase in the caliber and in the number of anastomoses between the portal and the caval venous systems is of course an attempt at a compensatory process. So far as the ascites is concerned, the compensation if successful is also quite favorable. As with other attempts at pathologic adaptation, however, the adaptation is not always useful, and it may be harmful in this case in two ways, namely, in the promotion of the risk of hemorrhage from dilated and weakened veins and in the shunting of the liver out of the portal circulation, the body thus being deprived of important services on the part of the liver.

Until recently it was generally assumed that ascites in hepatic disease was due entirely to obstruction of the portal radicles within the liver and that the dependent edema sometimes noted was caused by the pressure of the ascitic fluid on the vena cava. It is now realized that ascites does not account for all the water retention. Observers have noted the occurrence of such retention in both acute and chronic hepatic disease in the absence of ascites. Jones² has emphasized the occurrence of spontaneous diuresis at a certain stage of acute and subacute hepatic disease, as this is followed usually by rapid clinical improvement he presented it as a valuable and favorable prognostic indication.

One probable cause of the disturbance in the fluid balance in disorders of the liver may be related to the blood plasma proteins. Several observers have noted some disturbance of the plasma proteins in various types of hepatic disease. This change is especially notable in cirrhosis, in which the total plasma proteins are reduced and particularly the albumin fraction. The globulin fraction may be less reduced, or it may actually be increased, with a resulting inversion of the albumin-globulin ratio. In several cases of cirrhosis reported the albumin content of the blood plasma was usually below 2.5 Gm per hundred cubic centimeters. Several students of this problem believe that the hypoalbuminemia may itself be an indication of hepatic insufficiency. It does not behave like the simple loss of protein through inanition or dietary deficiency. For Myers and Keefer³ could not increase the plasma proteins in their

cirrhotic patients by high protein diets and, further more, the reduction in the serum albumin bears no definite relationship to the amount of albumin lost in the ascitic fluid.

Changes in the Size, Shape and Consistency of the Liver—These changes are of value primarily in calling attention to a pathologic change in the organ. The size of the liver in portal cirrhosis is usually increased in spite of the term atrophic cirrhosis. Particularly in the earlier stages the liver is apt to be enlarged, and its increased consistency makes this factor more readily available to the examiner. In toxic cirrhosis the liver may be definitely decreased in size. The size of the cirrhotic liver is determined not only by the disappearance of parenchymatous cells and the contraction of fibrous tissue that tend to decrease its size but by the storage of fats and the presence of inflammatory products that tend to make the organ larger.

Tests of Hepatic Function—Tests have been devised for the study of many of the functions of the liver, including those having to do with the metabolism of carbohydrates, of proteins and of fats, its power of detoxication and its ability to excrete certain substances into the bile. Some of these tests have come into fairly general use, and this may be taken, to some extent, as a measure of their helpfulness. In view of the great reserve power in all these functions the tests are of possible importance only when lesions are widespread or diffuse throughout the liver. They usually have negative results, for example, in the diagnosis of such conditions as solitary abscess or sparsely scattered metastases in the organ.

Of the many tests, those that deal with the liver's excretory functions seem to be of most help in cases of cirrhosis. In cases of jaundice the study of the bile pigments in the urine, in the stool, in the duodenal contents and in the blood serum is distinctly helpful. The indirect and direct reactions of the van den Bergh test for bilirubin in the blood serum distinguish between retention and regurgitation jaundice. A positive van den Bergh reaction with a slight but definite increase in the serum bilirubin may reveal the presence of subclinical jaundice. By means of the quantitative van den Bergh test or the simpler icterus index test the amount of the bilirubin in the blood serum can be determined from time to time, and its increase or decrease may be of considerable value in the continued observation of a case.

In cases without jaundice, the study of the behavior of injected bilirubin indicates that it may prove to be a more delicate test than most others that have been devised. It will be noted that the substance used is one normally and constantly being excreted by the liver and its use in an excretory test is therefore quite rational. So far the expense of the pure bilirubin and the somewhat involved technic have militated against its general usefulness.

Other excretory tests are based on the fact that several dyes (phenoltetrachlorophthalein, bromsulphalein, bengal rose) have been found that are excreted entirely or almost entirely into the bile. The dyes are also recognizable quantitatively when retained in the blood serum and are measured by colorimetric methods. Perhaps the most widely used of these tests is the bromsulphalein test. It has attained a certain popularity and is of particular value in the absence of jaundice or when the degree of jaundice is minimal. Obviously when there is marked jaundice the retention of the dye in the serum may merely parallel the degree of jaundice.

² Jones C. M. and Eaton F. B. Spontaneous Diuresis in Acute and Subacute Hepatic Disease. *England J. Med.* 213: 907-918 (Nov. 1935).
³ Myers W. K. and Keefer C. Ascites and Edema in Cirrhosis of the Liver. *Am. J. Med.* 1: 1-5 (March) 1935.

Sometimes, however, a marked disproportion in the retention of dye is found in cases of small degrees of jaundice. In the performance of the test a dose of 5 mg. of the dye per kilogram of body weight is injected intravenously, at the end of one-half hour a specimen of blood is obtained and examined, the retention of a measurable quantity of the dye, 10 per cent or more, is considered definitely abnormal and indicative of damage to the liver.

Of the carbohydrate tests of hepatic function the galactose tolerance test may be of aid in diagnosis of the acute injury to the liver that precedes the development of toxic cirrhosis. In cases of marked jaundice there may be difficulty in the differentiation between diffuse necrosis of the liver and the jaundice due to obstruction of the common bile duct. The galactose test is of value especially in the early stages of the illness, when the destruction of liver cells, on the one hand, is at a maximum and when, on the other hand, the damaging effect of obstruction of ducts on liver cells is still slight. Other carbohydrate tests are occasionally used in cases of cirrhosis, namely, the levulose tolerance test and modifications of the dextrose tolerance test, but they usually give positive results only in advanced cases and in general seem less helpful than the excretory tests.

Methods based on the protein metabolism of the liver have not been strikingly helpful and are not widely used. If the changes in the blood plasma protein may be considered in the light of such metabolism they may be of value in the absence of other causes of hypoalbuminemia. The study of fat metabolism in this relationship is relatively new and not yet well evaluated.

TYPES OF CIRRHOSIS

Of the several types of cirrhosis, by far the commonest is the so-called common or portal cirrhosis, and with this type I am particularly interested in this paper. Next perhaps in frequency is the type called by Mallory⁴ toxic cirrhosis or cirrhosis of acute toxic origin. Of the relatively rarer types, the pigmentary cirrhotoses present quite separate problems and will not be considered at this time. By biliary cirrhosis is meant a chronic diffuse hepatic disease associated particularly with chronic jaundice and due either entirely to prolonged obstruction of ducts or to the combination of obstruction and infection of ducts. This type is also relatively uncommon, and it has a certain analogy to chronic pyelonephritis as a comparatively unusual cause of renal insufficiency. In both instances the problems of prophylaxis and of cure have to do with the avoidance or the amelioration of obstruction and infection in the respective excretory channels. At times there are definite surgical implications.

In cases of well developed ordinary portal cirrhosis the diagnosis is usually easy. The abdomen is distended with fluid, in spite of which the firm edges of the liver and of the spleen may be felt. The bulging abdomen is in striking contrast to the emaciation of the body elsewhere. There are the pinched saw face and the muddy or subicteric conjunctivae. Dilated veins on the thoracic and abdominal walls may be noted. There may be anorexia and nausea and perhaps vomiting, the tongue may be coated and the breath offensive. Hematemesis and melena may occur from oozing or rupture of an esophageal varix, there may be moderate or marked secondary anemia. Occasional spells of fever are not uncommon. The urine is rather scanty, is con-

centrated and contains urobilinogen. Mild jaundice may be obvious occasionally. An examination of the blood may show a positive van den Bergh reaction and a slight increase in the bilirubin content of the blood even in the absence of definite clinical jaundice. Such jaundice in cirrhosis is due not to a general obstruction of ducts, like that of a stone in the common duct, but to distortion and obstruction of small ducts here and there within the liver and may show varying degrees of severity. The blood may also show the characteristic changes in the plasma proteins. Excretory tests of hepatic function give definitely positive results. In the later stages there may be hypoglycemia, decreased fibrinogen content and all the evidences of extreme hepatic insufficiency. The earlier toxic symptoms include headache, general malaise, mild clouding of the sensorium and depression, later on delirium or drowsiness and coma are the striking features.

The cirrhosis of acute toxic origin may resemble clinically and pathologically the commoner portal type. It may develop soon or late after massive necrosis of

Hepatocellular Jaundice

A Chemical Poisons

1. Arsenobenzol derivatives—arsphenamine neoarsphenamine trypan blue etc.
2. Quinoline derivatives—cinchophen atophan quinophen phenolquin acophanyl hydroquin oxyhydride arcanol etc.
3. Halogen group—chloroform carbon tetrachloride tetrachlorethane ethyl chloride ethyl bromide, trichlorethylene tri bromethanol (avertin).
4. Aromatic organic compounds—trinitrotoluene (TNT) dinitrobenzene dinitrophenol picric acid, toluylenediamine and acriflavine.
5. Miscellaneous—arsenureted hydrogen phosphorus alcohol, lead, mercury, synthalin snake venom.

B Vegetable Poisons

Mushroom poisoning

C Bacterial or Virus Poisons

- Epidemic catarrhal jaundice (infectious jaundice) pneumonia, yellow fever influenza food poisoning typhoid paratyphoid typhus and parenteral fevers streptococci septicemia

D Protozoal Poisons

- Syphilis—icterus syphiliticus praecox specific chronic interstitial hepatitis
Sporochaeosis ieterohaemorrhagica amebic dysentery malaria, kala azar relapsing fever

E Miscellaneous

- Idiopathic nonepidemic catarrhal jaundice (some types) toxemia of pregnancy uremia goiter acidosis of recurrent vomiting in children portal cirrhosis

the liver, which is survived but after which the regeneration of liver cells takes place irregularly, many areas within the organ remain collapsed and become fibrosed and all the cells in many contiguous lobules are entirely destroyed.

It is known from many statistical reports on autopsies that a large proportion, perhaps one half, of the patients listed as having cirrhosis of the liver died of accident or some cause other than the cirrhosis. One cannot be sure in how many cases latent cirrhosis is well compensated and the patient reasonably safe in his hepatic health and how many patients may soon acquire signs and symptoms of cirrhosis. The fact, however, emphasizes the difficulties of early diagnosis and at the same time puts the physician on his mettle in making the attempt.

ETIOLOGY

In both the prevention of cirrhosis and the diagnosis of cases in the early stages, some consideration of the etiology is essential. In the acutely developing cases a single massive destructive lesion may suffice. The widely diversified list of possible agencies in the production of such lesions may be appreciated by study of a table like that published by Bockus and Tumen⁵ under the

⁴ Mallory F B. Cirrhosis of the Liver. Five Different Types of Lesions from Which It May Arise. Bull Johns Hopkins Hosp 22: 69 1911

⁵ Bockus H L and Tumen H J. Jaundice in Piersol G M. The Cyclopedia of Medicine Philadelphia F A Davis Company 1933 vol 7 p 588

title "Hepatocellular Jaundice," which is another name to indicate widespread necrotic lesions in the liver. In the commoner cases of portal cirrhosis with insidious onset and gradual progression there are presumably multiple small and frequently repeated insults to the liver cells, but there are no particular reasons to believe that the sources of these insults are different in kind from those capable of causing the more acute and massive lesions. In the case of acute hepatic disease there is the impression that one can divide the causes of the disturbance into direct exciting causes and predisposing causes, the direct causes being those listed in the table and the predisposing causes such factors as a depletion in the glycogen reserve of the liver, anoxemia, the presence of a preexistent chronic diffuse disease of the liver, pregnancy and the puerperium, toxic thyroid states and the presence of a syphilitic infection.

The etiologic factors in general of the insidious chronic cases are much less well understood, and one has distinct difficulty in separating possible exciting from possible predisposing causes, for example, it is believed that syphilis can directly cause the ordinary type of portal cirrhosis, and it is also believed that syphilis may be a predisposing factor in its development. Alcohol occupies a prominent place in the clinical mind as an etiologic agent in portal cirrhosis, which can quite correctly be called alcoholic cirrhosis in a large proportion of the cases, but there is no unanimity of opinion as to whether the alcohol is the directly poisoning agent or whether its chronic and persistent use predisposes the liver to damage by some other noxious substance.

The importance of syphilis and particularly of the treatment of this disease is being repeatedly emphasized now as a probable cause of cirrhosis. Statistics at present certainly do not show this relationship clearly, and some syphilographers are doubtful that the continuous treatment of syphilis over long periods (and particularly the use of arsphenamine) is an important factor in the development of chronic hepatic disease. Others, however, have repeatedly emphasized that it is, and Baldrige⁶ reported that of a series of thirty-six patients with cirrhosis one third had histories of treatment for syphilis. There is general agreement that in at least 25 per cent of the patients undergoing intensive antisyphilitic therapy there is some damage to the liver. The uncertainty concerns the production of chronic disease, for it is well known that the liver can recover promptly and completely from acute lesions. As an illustration of the possible importance of both syphilis and antisyphilitic therapy to the production of chronic hepatic disease, Kellogg, Epstein and Keri⁷ reported a high incidence (19 per cent) of abnormal hepatic function as shown by an excretion test (bengal rose) in a group of ninety patients with untreated syphilis. Antisyphilitic therapy caused transitory disturbances in hepatic function in five of twenty-nine patients originally having a normal function and caused further impairment in four of eighteen patients with initially abnormal function. Patients with initially abnormal hepatic function had they reported an increased tendency to have untoward reactions to antisyphilitic therapy.

DIAGNOSIS

In the attempt to make a diagnosis of cirrhosis of the liver in an early stage or in a late compensated case

6	Baldrige C W	The Relati	Am J M	1938	K	W	J	H	Treat
7	Kellogg Frederick	Epstein	Complications in the Treatment of Syphilis	1938	11	11	11	11	Hepatic Disease in Patients with Untreated Syphilis
	Treatment Ann Int Med	9	101	CM					

one cannot expect to attain scientific accuracy except in the rare instance in which biopsy can be done in the course of a laparotomy instituted for some other cause. There is no other definitive test. It is a true saying though none the less true, that before such a diagnosis of probability is possible one must have such an eventuality in mind, one must entertain the idea of chronic hepatic disease when consulted by a middle aged man who is evidently chronically but mildly ill or who gives a history of prolonged chronic alcoholism or of a syphilitic infection with persistent treatment. The interest in this possibility will be enhanced by a further history of malaise, loss of weight, "dyspepsia" and perhaps one or more episodes of slight jaundice. The finding of a firm palpable liver should then put one on the qui vive for further evidences of liver damage. In the painstaking history one should inquire for the various possible etiologic factors, including chemical poisons, vegetable poisons and bacterial and virus diseases. One will inquire carefully for symptoms so vague that they may have been almost forgotten by the patient, particularly transient feelings of fatigability, of anorexia, of occasional nausea and vomiting, especially in the morning, of abdominal pain or unrest or irregularity of the bowel.

The suggestion of cirrhosis may come in a quite different way when the patient's chief complaint is of the vomiting of blood or the passing of black stools. Careful inquiry may then elicit a report of the early symptoms mentioned, or the hematemesis may have occurred with little or no warning. The hemorrhage is not often repeated within a short time, and the considerable interval that usually elapses before the development of ascites affords an opportunity for the use of modern methods of treatment before the reserve power of the liver has approached its vanishing point. In the case of a middle aged man with hematemesis or melena, think of the possibility of cirrhosis as well as of a peptic ulcer.

After a careful physical examination that may reveal an enlarged and perhaps slightly tender liver and possibly slight evidence of portal obstruction, further tests may be helpful.

The van den Bergh reaction of the blood serum may disclose latent jaundice that was not noticeable otherwise.

Urobilinogen may be present in excess in the urine. The bromsulphalein test may show an abnormal retention of this dye in the blood serum.

The total blood proteins may be somewhat reduced in amount, although it is unlikely that the normal albumin-globulin ratio will be disturbed.

Particularly important, especially in cases in which there is a history of hemorrhage, is the x-ray examination of the lower end of the esophagus for dilated varices.

TREATMENT

In the institution of a therapeutic regimen for chronic diseases, a sine qua non is the satisfactory cooperation on the part of the patient, hence the psychotherapeutic approach, with encouragement, with full and complete explanations, must be primary. A situation arises sometimes, unfortunately, in which it seems necessary to frighten a patient and to frighten him badly before he can be persuaded to change his unhygienic habits. Unless the patient has a reasonable intelligence (not necessarily education) there is little hope of stopping the progress of the disease and building up a serviceable hepatic reserve.

The second step is to secure the complete elimination, as far as practicable, of potentially harmful agents. Alcohol comes to mind at once, and one realizes the difficulty of persuading the addicted to abstain. One will probably have less trouble in eliminating irritating foods, such as spices, condiments and pickles, that are ordinarily included in this category.

There is difference of opinion in regard to the therapeutic course to pursue when a patient with early cirrhosis is receiving or should receive antisyphilitic therapy. Most authorities advise beginning treatment with iodides and heavy metals, with a later tentative trial of arsphenamine in small doses. Moore⁸ emphasized the point that for patients without ascites the prognosis is good and for patients with ascites the prognosis is bad regardless of the type of treatment.

The diet must be adapted to prolonged use. Counsel of perfection should be mingled with judgment. Palatability and variety are important. The intake of protein may be kept down to about 1 Gm per kilogram of body weight. Although in view of much experimental work one might wish to eliminate meat entirely, it is probably wiser to permit its use in small portions two or three times a week. Meat extracts and beef broth should be eliminated. The chief protein requirements should come from vegetables and dairy products.

Of the fats, butter and cream should be permitted to enhance the palatability of the diet. Fried foods, fat meats and vegetable oils should be omitted.

A high carbohydrate diet is essential. It is the most important single agent conducive to building up the liver's resistance and adding to its reserve. The ideal should be to keep the liver cells constantly well supplied with glycogen. It is estimated by Althausen⁹ and others that the usual high carbohydrate diet will furnish from 250 to 300 Gm of dextrose daily. A theoretical quantity of from 500 to 550 Gm is desirable, and the additional amount may be served as pure dextrose in fruit juice between meals and before the patient retires at night. Cereals and other starchy vegetables loom large in such a diet. If there are unpleasant digestive symptoms the green vegetables may be prepared as purees. The dextrose may at times be disturbing and should then be omitted for a period or given during two days of each week.

The hygiene of rest and of exercise needs attention. The patient should avoid marked fatigue. There should be a brief period of rest, with the patient lying down, in the middle of the day, and he should spend nine hours in bed each night. Mild exercise, well within the patient's tolerance, may be permitted at once, and with improvement this should be gradually increased. Recreation and diversity of interests are thereby enhanced.

Certain accessory methods of therapy may be useful. Many physicians like to give iodides a thorough trial even in the absence of a positive Wassermann reaction or other evidence of syphilis. Small daily doses of calcium may be useful and would seem to me harmless. Certainly in some cases of more acute poisoning of the liver such as poisoning with carbon tetrachloride, the toxicity is attributed in part to guanidine compounds and the favorable effect of calcium to its union with these substances.

There are a number of reports relating to protective methods in experimental poisoning of the liver.

Cutler¹⁰ found that no type of diet would protect the liver tissue of his experimental animals from destruction by carbon tetrachloride but that diets rich in carbohydrates and in calcium were effectual in combating the degree of intoxication and the number of deaths secondary to the hepatic damage. Forbes, Neale and Sherer¹¹ described an aqueous solution of an alcoholic fraction of liver that protects animals against necrosis due to administration of chloroform or carbon tetrachloride. Their report is intriguing and may hold a certain amount of promise for the therapy of human diseases.

Particular situations may demand special attention. With bleeding esophageal varices, the esophagus must be kept at complete rest by the withholding of food or water by mouth and the administration of fluid and dextrose parenterally. Transfusions of blood may be advisable later. In considering the treatment of early cases one needs not go into the treatment of ascites. Early in the development of that symptom, however, one may accomplish a great deal by the moderate withholding of salt and of fluids and the use of ammonium chloride and mercurial diuretics such as salyrgan and mercupurin (the sodium salt of trimethylcyclopentane-dicarboxic acid-methoxy-mercury-allylamide-theophylline).

Finally, a physician and his patient should have regular conferences in which the details of the treatment are discussed and the patient's confidence and cooperation stimulated by judicious admonition and encouragement.

1035 North Calvert Street

THE LASTING CURE OF EARLY PULMONARY TUBERCULOSIS

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There are seven reasons for directing attention again to the early tuberculous lesion and its cure, to wit:

The nature of the early lesion is better understood now than ever before.

The time of life when the lesion is most likely to appear is more clearly defined.

The methods of diagnosing its presence have been developed and perfected.

The subsequent behavior of the early lesion and the ways of its healing or advancement are better known.

Most disabling and fatal tuberculosis originates in this lesion.

Knowledge of the methods of treatment and their proper selection and application is more accurate and reliable.

The far reaching and vastly superior results of proper and timely treatment of the early lesion are firmly established.

Today, as in previous decades, from 60 to 70 per cent, at least, of all tuberculous patients in this country are in an advanced stage of the disease when the diagnosis is made, their treatment is exceedingly costly in terms of money and other less tangible but more important values, and the results of treatment are, on the whole, unsatisfactory. Recovery involves a certain permanent loss of pulmonary function, a limitation of the

8. Moore, I. E. *The Modern Treatment of Syphilis*. Springfield, Ill.: Charles C. Thomas, Publisher, 1933.

9. Althausen, T. L. *Dextrose Therapy in Diseases of the Liver*. J. A. M. A. 100: 1163 (April 15) 1933.

10. Cutler, J. T. *Influence of Diet in Carbon Tetrachloride Intoxication in Dogs*. J. Pharmacol. & Exper. Therap. 45: 209-226 (June) 1932.

11. Forbes, J. C., Neale, R. C. and Sherer, J. H. *A Liver Preparation Protecting Against Necrosis from Chloroform or Carbon Tetrachloride Administration*. J. Pharmacol. & Exper. Therap. 58: 492-498 (Dec) 1936.

Read before the Section on Practice of Medicine at the Eighty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June 10, 1937.

usual activities of life and a danger of relapse. Could the knowledge that has come slowly through years of experience and research be applied wisely and widely, this picture could be changed almost completely for the better. The early pulmonary lesion is one of the vital and focal points for the attack.

NATURE OF THE EARLY LESION

It is obvious that the small tuberculous lesion first discovered in the lung is not necessarily an early one. The line of thought will be more direct if I start with the lesion that is not only small but also recently developed. It may be caused by infection from without or by an extension from preexisting lesions, usually tiny or even microscopic, which, for a short or long time, have lain dormant and concealed. Previous examinations, therefore, may have revealed nothing abnormal except perhaps an apparently insignificant apical scar or a calcified hilar lymph node. The development of the early lesion, often called the early infiltration, may be rather abrupt, that is, within a week or a month, or it may be gradual with static periods of apparent quiescence. Rapidity of development, however, is one of its common characteristics. Pathologically it is a patch of tuberculous bronchopneumonia, occupying a section of the parenchyma usually not more than 2 or 3 cm in diameter, sometimes at the apex but more often just below. The patient has no symptoms or only slight to moderate constitutional ones, chiefly a loss of a few pounds of weight and a little undue fatigue. Fever is not usually detected, and cough, expectoration and bloody sputum are rare at this stage. In some cases a patch of fine râles may be heard directly over the small lesion, but more often the physical examination reveals nothing abnormal in the chest. The roentgenogram shows, as a rule, the small area of soft infiltration in one lung. Tubercle bacilli are not found in the sputum unless the lesion has caseated and broken into a bronchus, and this is not the condition at the very onset.

TIME OF APPEARANCE

Pulmonary tuberculosis has been known since Hippocrates to take its heaviest toll between the ages of 18 and 35. This relates to disability and fatality and only by inference to the time of development of the early lesion, which has been revealed more clearly in recent years through case finding surveys among apparently healthy people. No age is immune to this danger, but the peak of development has been found to be between adolescence and the late twenties. Periodic surveys among grade school pupils have not led to the discovery of many early infiltrations. In a particularly methodical study on the basis of annual examinations of a clerical force of about 10,000 women and 2,000 men between the ages of 18 and 42 at the home office of the Metropolitan Life Insurance Company, Fellows¹ found very definite trends. Between January 1932 and December 1936, clinical pulmonary tuberculosis developed in 142 previously healthy persons, of whom 83 per cent were between the ages of 18 and 27. Here, as in other studies, the incidence was relatively higher and rose to its peak earlier in young women.

DIAGNOSIS

As shown in previous studies—the early lesion will be discovered in only a small minority of cases unless

the disease is viewed as a community problem and organized searches for it are made periodically. The patient, having few or no symptoms of illness, does not seek the physician. Rather, the physician, in his capacity as a far seeing health officer, must seek the patient. Tuberculin testing and x-ray examination of the chest, wisely planned and applied, are indispensable parts of the diagnostic method. If the diagnosis is adequate, it will include not only a recording of the lesion but also an interpretation of its potential significance and the need for treatment. The small size of the infiltration, the lack of symptoms, and the failure to get confirmatory evidence in the finding of tubercle bacilli in the sputum often cloak the situation with a grossly undeserved aspect of innocence.

SUBSEQUENT BEHAVIOR OF THE LESION

The early infiltration may be absorbed almost completely, leaving behind a small scar, or it may spread, become caseated and liquefied at its center and ulcerate into a bronchus, whence other parts of the lung may become contaminated, the beginning of advanced tuberculosis. Absorption, if it occurs, is slow. The tendency to central caseation is a predominant one, varying in intensity and rapidity. After ulceration and excavation of the lesion occurs, the rate and extent of formation of secondary lesions vary within wide limits. Acute bilateral tuberculous bronchopneumonia may be set up within a few weeks. More often the extensions occur at irregular intervals, and gradually the case drifts into the confirmed chronic state. The eventual contamination and infection of the larynx, intestine and other related structures by the bacilliferous discharges from the pulmonary cavities is frequent.

The frequency of spontaneous healing of untreated early lesions is a matter for further investigation. The number of old apical scars discovered at autopsy testifies to the effectiveness of natural resistance in most people. But these scars may not and probably as a rule do not represent the residues of lesions as large or as acute as those I am considering and therefore should not be taken as a measure of the spontaneous healing capacity of the latter. This can be determined only by prolonged observation of untreated patients harboring such lesions. It undoubtedly varies according to many factors, including age, race, sex and complicating diabetes. According to Braun and Roulet,³ who have recently reviewed the European literature, the most optimistic observers estimate that as high as 40 per cent of the lesion may heal completely. I am reasonably certain, after ten years of special attention to the point, that the majority of early infiltrations developing in young people (and most of them do develop in young people, as stated) progress and undergo excavation if they are not promptly and properly treated.

MOST SERIOUS TUBERCULOSIS RELATED TO EARLY LESION

Since most patients have advanced disease when the diagnosis of tuberculosis is first made, the mode of development in the individual case is usually a matter for intelligent conjecture and inference. But sufficient information has been accumulated by the pathologists and from a study of pathogenesis in the living to warrant the conclusion that most disabling and fatal tuberculosis originates from the once innocent appearing early infiltration. An appreciation of this linkage has been lacking until recent years yet is one of the most

1 Fellows H. H. Personal communication to the author.
2 Amberson J. B. Jr. Some Case Findings. Principles of Practical Significance. Tr. Nat. Tuberculosis Assn. annual meeting 1934, pp 204-212. Case Finding Methods for the Diagnosis of Tuberculosis. J. A. M. A. 107: 256-258 (July 25) 1936.

3 Braun Paul and Roulet Andre. Etude critique du Fruc infiltrat. Rev. de la tuberc. 3: 258-279 (March) 1937.

important and basic principles in treatment and control. The conception, to be complete, includes the element of time relationships, because, as stated, the extension from the early lesion may be rapid or slow, limited or wide, continuous or discontinuous. Connecting this conception with the evidence that most early pulmonary infiltrations put in their appearance between adolescence and the late twenties, it follows that advanced tuberculosis is unlikely to develop in a person past 30 unless he has acquired a considerable lesion before this age.

METHODS OF TREATMENT

Since the tendency is for the early lesion to caseate at its center fairly rapidly any treatment which prevents, retards or arrests this process would logically strike at a very vital point. Absorption and durable fibrosis can be expected only when caseous degeneration has not advanced greatly. Our knowledge is still too vague to permit speaking in precise terms about the many factors which stay the progress of caseation and favor healing. Clinical experience shows that they are deep rooted and include such things as circulatory tone, capillary permeability, endocrine balance, biochemical relationships and nervous, emotional and mental stability. In fact, in the presence of the early infiltration with little or no cavity formation, these general influences are of major importance and are the main basis of the rest cure. The situation is very different from the advanced case presenting a pulmonary cavity in which local mechanical factors are important and require artificial collapse of the lung to prevent further dissemination of the infection while healing proceeds. The great advantage of the rest cure in a sanatorium, especially for younger people, has been amply proved by clinical trial. The sooner and the more strictly this can be instituted, the more effective it is likely to be. In many cases the treatment of the first few weeks is the most important of all. In the case of a person under the age of 25 with an early infiltration, our practice at Bellevue Hospital is almost invariably to advise a period of strict bed rest, lasting from two to four months. Some older patients, especially those with indolent lesions of considerable standing, may be treated less rigidly pending further clinical study. The younger the person, the more labile the lesion is likely to be and the greater the need for prolonged rest. The behavior of symptoms, repeated estimation of the blood sedimentation rate and of the white cell formula, and, above all, repeated roentgenographic examinations, at first every week or two, are the most reliable guides. Consideration of the potential hazard of the lesion, as already discussed, and of the desirability of permanent recovery with the least sacrifice of function often takes precedence and dictates continuation of rest in bed well beyond the time when symptoms have subsided and the hematologic picture is normal. From six to twelve months of sanatorium care is advantageous. Most patients can then gradually resume activities, but a definite limitation of these for another year is usually necessary. Collapse or rest of the lung by pneumothorax or temporary paralysis of the diaphragm may give the necessary lift to the patient who, on rest treatment alone, does not show definite and steady favorable progress. Since these measures occasionally are attended by hazards—some great and some small—there should be a specific and positive reason for using them. They are not necessary for the satisfactory clinical cure of most early infiltrations, and, with the exception stated there is no convincing evidence that

they shorten the desired time of treatment. My experience does not lend support to the view that in these cases pneumothorax can be considered a complete substitute for rest treatment. Few, if any, young people are able under any kind of treatment to continue work without serious jeopardy to their chances of lasting recovery. The apparent economic saving too often turns out ultimately to be a loss.

RESULTS OF TREATMENT

Statistics relating to the results of treatment of early pulmonary lesions are mingled with those concerning lesions which are small but not very early. Furthermore, the failure of patients to report for diagnosis during the first stages of development of the infiltration and the hesitancy of physicians to advise treatment when they do report help to account for the relative scarcity of cases in sanatoriums. I can speak of an experience with more than 100 cases in which the lesions were actually early, since previous roentgenograms showed no disease, they occurred in young people, and observation was possible from one to ten years afterward. This is supplemented by consideration of many hundreds of other cases of rather recent origin in which the duration and course of the disease was reasonably clear though not always verifiable. The experience is not adequate for statistical presentation and I give only a considered judgment, based more on an intensive study of individual cases than on groups. Thus far, most of the untreated cases have progressed into advanced disease. Patients treated promptly and with bed rest at the start have recovered without progression of the lesion in about 90 per cent of the instances. In most of the others, advancement or relapse, if any, has been promptly detected and usually controlled by artificial pneumothorax. Considering permanence of recovery, preservation of pulmonary function and working ability after treatment, the experience has been much superior to any other plan attempted. In the Bellevue School of Nursing the record for the past six and one-half years, during which the ideal plan has been in force, is as follows. All tuberculosis appearing in student nurses has been discovered early, usually in the form of the early infiltration. Progression or relapse of the lesion in spite of rest treatment has occurred in less than 5 per cent of the cases. All who have completed treatment are able to work, and there have been no deaths from tuberculosis. The experience can be said to approximate closely the results of treatment of minimal lesions reported by Brown⁴ from the Trudeau Sanatorium, despite the distinction between minimal lesions and early lesions previously mentioned.

SUMMARY

1 The early lesion of clinical pulmonary tuberculosis is usually a small patch of tuberculous bronchopneumonia in one lung. It appears most often in the ages between adolescence and the late twenties.

2 The early lesion is not often diagnosed except in periodic health examinations or case finding surveys. As a result, most cases are advanced when treatment is instituted. This can be changed.

3 The prevailing tendency of the early lesion in young people is to caseate at its center, excavate and spread. The transition to extensive bilateral pulmonary disease may be a matter of a few weeks, a few months or many years.

⁴ Brown, Lawason. The Present Status of the Treatment of Pulmonary Tuberculosis. *Ann. Int. Med.* 10: 147-155 (Aug.) 1936.

4 Most symptomatic, cavernous, advanced, disabling and fatal tuberculosis originates from the early infiltration

5 Rigid and prompt treatment of the early infiltration, as it appears especially in young people, with a preliminary period of from two to four months' bed rest has proved to be the most effective in terms of lasting recovery and avoidance of advanced relapsing disease

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THE DIAGNOSIS AND MANAGEMENT OF LATENT, SUSPECTED AND EARLY CLINICAL TUBERCULOSIS

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Methods of tuberculosis control, in large part dependent on the ability to recognize latent and early clinical tuberculosis, have been modified greatly by a better understanding of the epidemiology of the disease and by new and more accurate diagnostic aids. Use of the terms consumption and phthisis to designate pulmonary tuberculosis is very suggestive of the advanced stage in which the disease was generally diagnosed three or four decades ago. The differentiation from other chronic respiratory diseases was not made until marked deterioration of health with emaciation, weakness and dyspnea had occurred, while the hopeless outlook and the stigma attached to the disease made the physician hesitate to make the diagnosis so long as any excuse existed for failure to make it.

Since that time educational campaigns by public health agencies have resulted in recognition of tuberculosis as a contagious disease which can frequently be controlled in the individual case by suitable treatment and can be prevented from spreading to others by isolation or prophylactic care. Examination of the sputum has gradually been accepted as a valuable diagnostic aid. The possible significance of unexplained loss of weight, fatigue, persistent cough, hoarseness, indigestion, hemoptysis and pleurisy with effusion has been repeatedly emphasized and careful physical examination of individuals exhibiting these symptoms has frequently resulted in the diagnosis of tuberculosis at a relatively early stage in its clinical course.

The importance of the diagnosis of pulmonary tuberculosis through history, symptoms and physical signs cannot be overestimated, but unfortunately symptoms sufficiently severe to cause concern often lag far behind the anatomic involvement, so that the majority of patients present moderately or far advanced disease when they first seek medical attention. Physical examination also, even in the hands of skilled examiners, not infrequently fails to demonstrate extensive tuberculous lesions.

Modern methods of tuberculosis case finding employing the tuberculin test and x-ray examination have modified our conception of early diagnosis and have presented the general practitioner with a new problem, namely, the management of apparently healthy persons who present evidence of tuberculous lesions on x-ray examination. These cases are discovered in one of two ways, either through examination of contacts of known tuberculous patients or in tuberculosis surveys of

groups of apparently healthy persons such as high school and college students, pupil nurses and industrial employees. Occasionally cases are found by accident when x-ray examination is made with some other purpose in mind than the discovery of a tuberculous lesion.

The importance of the contact method of tuberculosis case finding is recognized by agencies primarily interested in tuberculosis control. The prophylactic care of contacts should also be the concern of every physician who is treating a patient with pulmonary tuberculosis.

The examination of contacts to discover those who may have been infected by the patient should include the tuberculin test and x-ray examination, since it is asymptomatic or early clinical disease that is being sought. In apparently healthy individuals a negative tuberculin reaction indicates that infection has not occurred, and from a practical standpoint further examination, though desirable, is not necessary to exclude tuberculosis. X-ray examination of all contacts or at least of contacts giving a positive reaction to tuberculin should be made whenever possible. In this way lesions can be discovered before they have caused ill health at a time when they can be most readily controlled.

If x-ray films are too expensive and cannot be obtained free or at a nominal cost, or if for any other reason reliable x-ray reports cannot be obtained, the physician should not relinquish his efforts to determine the results of infection of the contacts. Fluoroscopy, if available, affords an inexpensive diagnostic aid. Recent improvement in fluoroscopic screens has increased greatly the accuracy of this type of x-ray examination. Although inferior to x-ray films, the fluoroscope will reveal the more extensive and therefore probably the more significant pulmonary lesions.

In the absence of these facilities, careful physical examination must be relied on for the discovery of lesions in their early clinical stage. Influenza, colds in the chest or unexplained febrile attacks should be regarded with suspicion and should keep the examiner on guard. Sputum, if present, should be repeatedly examined. Fatigue, loss of weight and other symptoms suggesting tuberculosis require careful observation or even prophylactic treatment.

It is in order to point out that examinations should be repeated at frequent intervals as long as contact exists. When contact is with sputum positive tuberculosis, the interval between examinations should be three months or less. If sputum is not positive, from three to six months is an appropriate interval. The first appearance of a lesion in the x-ray film may occur months after contact with the presumable source of the disease has ceased, and the lesion, when present, may progress so slowly that no symptoms occur for a further indefinite period. For this reason, periodic examinations should continue after contact is finally broken. If x-ray examination is available, two years of observation is sufficient, but if physical examination must be relied on, periodic examinations should be made for at least five years. The importance of periodic examinations requires emphasis because not infrequently contacts are examined only once. If the expense involved prohibits the making of periodic examinations as frequently as has been suggested, they should be made less often rather than stopped completely.

The survey method of case finding consists of the application of the tuberculin test and x-ray examination to groups of apparently healthy individuals in order to discover those presenting asymptomatic tuber-

culous lesions. Students in high schools and colleges are usually chosen for this type of case finding because they are readily available and the incidence of significant lesions is sufficiently high to justify the effort. This is a phase of the tuberculosis control program that is becoming more and more widely employed and in which the family physician should play an important part. A questionnaire sent to twenty-five of the largest cities in the United States in November 1936 revealed that nineteen had some plan for the control of tuberculosis in high school pupils already in operation while in several others plans were contemplated or larger plans were in effect, including high school pupils but not especially applicable to them.

In most tuberculosis surveys the observations are reported to the family physician or to the parent with the advice that he consult the family physician about the report. The reporting of positive tuberculin reactions without x-ray examination often results in needless worry to parents and it is doubtful whether surveys employing the tuberculin test are justified unless provision is made for continuation of the examination. The positive tuberculin reaction indicates tuberculous infection, but x-ray examination is necessary to determine whether or not the infection has resulted in a significant lesion. When a tuberculous infiltration is reported, the tendency on the part of the physician is to reassure the worried patient or his agitated parents and in some instances, unfortunately, the reassurance takes the form of denying either the existence of the lesion or its significance. This opinion is usually given after a physical examination which fails to reveal an abnormality. It must be accepted as a fact that apparently healthy persons may have potentially serious tuberculous disease and that many of those who develop tuberculosis have been strong and robust before the onset of symptoms at a time when x-ray examination would have revealed an active tuberculous lesion. The failure of the physician to recognize the limitations of physical examination and the value of x-ray examination is harmful both to himself and to the tuberculosis case finding program.

In determining the proper advice to give to a patient with latent or early clinical tuberculosis, the family history, the age of the patient, his physical condition and his social status should be considered. Since tuberculosis is a contagious disease transmitted chiefly through contact in the household, the family physician is the person who is best fitted to assume the responsibility for the management of the patient. When patients have tuberculous lesions without symptoms or physical signs, x-ray examination, as already pointed out, must be relied on as a guide to treatment and the physician should understand the type and significance of the lesion with which he is dealing.

The susceptibility to disease and the type of tuberculous lesion that most commonly occurs vary with age. In infancy symptoms and physical signs on which a diagnosis of tuberculosis may be based do not occur until the disease is far advanced or until one of the severe and usually fatal forms of dissemination, such as tuberculous meningitis or miliary tuberculosis, has set in. For this reason the tuberculin test is of special importance in apparently healthy infants who have been in contact with sputum positive tuberculosis. If the tuberculin test is positive x-ray examination should follow, and if a lesion is found, isolation in a hospital is indicated. When the contact is broken and the child has been placed under favorable conditions the prognosis is not hopeless unless the disease is already far

advanced. Even at this age, pneumothorax treatment in unilateral or predominantly unilateral cases may be employed. The lesion found at this age is usually a tuberculous bronchopneumonia or tuberculous pneumonia in the form of consolidation of one or more lobes or parts of one or more lobes. The lymph nodes at the root of the lung are usually enlarged and caseous.

Between the ages of 2 and 12 years the typical lesion found by x-ray examination is the calcified pulmonary nodule with associated calcified focus in the tracheobronchial lymph nodes. Calcification of tracheobronchial lymph nodes recognizable in chest films is not progressive and does not cause ill health but indicates severe exposure to tuberculosis during childhood, which exposure may be continued into adolescence, resulting in the development of a lesion of adult type. Again a second exposure to tuberculosis from a new source of contagion is more likely with these children, since tuberculosis is characteristically a household disease. All members of the households of children exhibiting tracheobronchial calcification should be examined in an effort to locate the source of contagion and other individuals who may have been infected from it.

Calcification may be regarded as evidence of healing, and it is only when calcification has set in that tuberculosis of the tracheobronchial lymph nodes is ordinarily diagnosed. The presence of a calcified focus in the nodes, while leading to a diagnosis of tuberculosis, indicates a condition that is less threatening to health than the caseous focus that preceded it.

Because they do not differ in density from normal structures at the root of the lung, caseous foci in the tracheobronchial lymph nodes, unless very large, cannot be diagnosed and are disregarded. Occasionally the caseous lesion is so large that the nodes encroach on the lung field and in the x-ray film cast a shadow that extends beyond the normal hilus shadow. Here the lesion is discovered at a time when there is no evidence of healing and the possibility of progressive tuberculosis is greatest. The condition must be differentiated from other causes of lymph node enlargement. A history of contact with tuberculosis and a positive tuberculin reaction are suggestive of tuberculosis but do not exclude it by their absence. A complete blood count is indicated as well as examination for enlarged spleen and lymph nodes in other areas. The prognosis in this type of tuberculosis is good in white children if contact is broken. The nodes decrease in size, and calcification may occur.

In the age group under discussion, nonapical pulmonary infiltrations due to tuberculosis of childhood type also occur. The majority do not progress into clinical disease but largely clear, leaving only a few strands in the x-ray film. Lesions of this type that progress must be differentiated from chronic nontuberculous pulmonary disease. The nontuberculous lesion is almost always basal, is often bilateral and is usually accompanied by numerous medium and coarse moist rales. A history of pneumonia, particularly if recurrent, of frequent colds with long continued cough or the presence of infected adenoids or infected accessory sinuses is common, while with severe lesions large quantities of sputum may be expectorated. When the disease is of several years' duration the symptoms are usually much more marked in the winter and slight or absent in the summer. X-ray examination shows that the nontuberculous lesion is most intense near the borders of the heart, which are blurred and just above the diaphragm, the shadow of which is usually irregularly peaked and blurred near the spine. The tuber-

culous lesion can usually be suspected by a history of contact. The tuberculin reaction is positive. Physical signs, including râles, are not marked. Until late in the disease x-ray examination shows that the lesion is usually unilateral or predominantly unilateral and is frequently situated anteriorly, often in the right middle lobe. Severe symptoms and positive sputum do not occur until the disease is far advanced.

Tuberculosis is sometimes suspected in children of elementary school age owing to the presence of underweight and fever. It is sometimes forgotten that the temperature in children is about 1 degree F higher than in adults and may reach 100 F or more without any detectable cause. Underweight has been shown by a number of studies to occur with about equal frequency in tuberculin negative and tuberculin positive children. It should not be considered as a symptom of tuberculosis unless a significant tuberculous lesion can be demonstrated.

Adult type tuberculosis is the chief cause of death between 15 and 45 years of age. The adult type of lesion rarely occurs before puberty but it is found during adolescence with increasing frequency as age advances. For this reason special attention should be given to adolescents and young adults who are in contact with pulmonary tuberculosis. Surveys indicate that apical infiltrations are demonstrable by x-ray examination in about 1 per cent of tuberculin positive boys and 2 per cent of tuberculin positive girls of high school age. The lesion may be present for months or years, as shown by x-ray examination, before it causes symptoms and physical signs. In many instances the lesion becomes scarred and inactive without treatment and without ever having been clinically manifest.

X-ray examination is necessary to determine the site, extent and characteristics of a latent apical infiltration. The tuberculin reaction is positive with few if any exceptions. With more extensive lesions, abnormal physical signs may be detected. Diminished expansion and diminished resonance on the affected side are the earliest physical signs. Crepitant and subcrepitant râles at one or both apices heard on breathing and increased after cough, or heard only after cough constitute the most reliable physical sign. The physical changes are complicated by anatomic differences in the two apices. On the right, owing to the smaller apex and the position of the trachea resonance is diminished, the breath sounds tend to be bronchovesicular and the voice sounds are louder than on the left. For these reasons tuberculous infiltration is often suspected at the right apex. Mild degrees of scoliosis and changes in the position of the subject, particularly in children, also give slight variations in physical signs. It must be recognized that unmistakable physical signs are rarely present in the early lesion, so that slight but persistent abnormal changes should be regarded with grave suspicion.

Very careful attention should be given to the symptoms of adolescents and young adults who are in contact with tuberculosis or who are known to have apical infiltration. So-called grip or influenza, pain in the chest, hemorrhage, cough or any other local or general symptom may indicate the onset of clinical tuberculosis.

The management of latent and early clinical tuberculosis should follow well recognized principles. One of the most important considerations is the prevention of further infection.

If the source of disease is not known, every effort should be made to find it. Examination of all members of the household or others with whom the patient has been in contact should be made. Owing to the

chronic nature of tuberculosis, the original infection may have occurred months or years before the lesion is discovered. On the other hand, the source of contagion may be an unrecognized case of tuberculosis, with which the tuberculous patient is still in contact.

If the origin of disease is known, isolation of the sputum positive case in an institution or removal from the household of the contact with latent or early clinical disease is recommended. If this is not feasible, well known prophylactic measures with regard to cough, to disposal of sputum, to care of dishes and linen and to personal conduct should be observed by all concerned. The physician should inform the patient and family about the danger of contagion or provide written instructions, which are often very helpful.

The physician who is caring for persons in contact with tuberculosis, whether or not they have a tuberculous lesion, should safeguard their health by advice calculated to promote proper hygienic habits. It is reasonable to suppose that attention to these precautions will often prevent the development of a significant lesion.

In addition to periodic examinations for contacts, patients without known contact who exhibit asymptomatic lesions should be kept under observation until it is certain that the disease is not progressive. The type and extent of the lesion are important factors in deciding the frequency with which reexaminations should be made. If the lesion when first seen is of slight extent and its appearance suggests that it has already undergone retrogressive changes, that is, calcification or scarring indicated by a strandlike appearance in the x-ray film, yearly examinations, in the absence of contact, are sufficient. Infiltrations that are not strandlike require examinations at much more frequent intervals, probably every three months, until they undergo favorable changes. In all instances examinations should be continued until the infiltration has a strandlike appearance that does not change during a period of at least three years.

In patients with latent and early clinical tuberculosis the type, extent and clinical manifestations of the lesion determine the treatment that is necessary to control the disease. Rest is the principal factor in treatment, and in many instances partial or complete restriction of activities is indicated.

In a large group, however, in addition to periodic examinations and prevention of continued infection, nothing more is indicated than an ordinary routine including the rest, exercise, nourishment and hygienic habits calculated to promote good health in normal persons. Continued observation of this type without additional restriction of activities is indicated for tuberculous contacts with no demonstrable tuberculous lesion, for preadolescent children with calcified childhood type lesions or strandlike nonapical infiltrations, and for adults with asymptomatic apical lesions, strandlike in the x-ray film.

Partial restriction of activities is indicated for patients with asymptomatic lesions that show no evidence of healing. The modified regimen for these patients includes from ten to twelve hours in bed each night, with a rest hour in the afternoon if possible and extra rest on Sundays and holidays. Strenuous work and exercise are forbidden as well as exertion to the point of fatigue. Three good meals daily should be taken, with extra nourishment if underweight is present.

The patients put on this routine include children with uncalcified lesions of the tracheobronchial lymph nodes demonstrable in x-ray films or nonapical infiltra-

tions that are not strandlike on x-ray examination and adolescent children with apical infiltrations. In the latter, the lesion which has occurred recently should not be regarded as inactive and an altered regimen is indicated, no matter how trivial it may appear to be. Apical infiltration in young adults, unless slight in extent and strandlike in appearance on x-ray examination, also makes an altered regimen desirable.

Patients with more advanced lesions should take sanatorium treatment or its equivalent in bed rest at home. In some instances collapse therapy is indicated in addition. All patients with tuberculosis with symptoms or physical signs should have the advantage of sanatorium treatment regardless of the extent of the lesion or the character of the symptoms. In addition, patients with latent disease whose lesions progress under observation or under an altered regimen are equally in need of sanatorium treatment.

The final success of the method of tuberculosis control through early diagnosis depends on the application of adequate treatment to the progressive lesion either while it is still asymptomatic or immediately after it becomes clinical. The chief emphasis of recent educational campaigns has been placed on early diagnosis. Both the medical profession and the public now require education in the need for early treatment of tuberculosis when there has been slight or no impairment of health.

Henry Phipps Institute of the University of Pennsylvania

ABSTRACT OF DISCUSSION

ON PAPERS OF DR. AMBERSON AND HETHERINGTON

DR. BRUCE H. DOUGLAS, Detroit. Dr. Amberson has said that a person past 30 is not likely to develop serious tuberculosis unless he has acquired a definite lesion before that age. While this is quite true and is well supported by the experience among the nurses which he has reported and is further supported by the work of Fellows, still there is the danger that some of us may fall into a sense of false security and forget that this is a qualified statement subject to definite exceptions. Recently a man aged 62, who had had repeated negative chest films, came to the hospital with acute tuberculosis and died within six weeks. Further this line of reasoning is apt to result in programs like the following. Certain communities are examining school teachers regularly, all positive reactors to tuberculin being roentgenographed every year. If nothing is found by the age of 25 the examinations are discontinued on the basis that serious tuberculosis is not likely to appear after that age if the patient has a clear chest up to that time. Dr. Amberson of course would say 30 years, but even then I am sure he agrees that there are some who will develop disease even after that age. I agree that treatment of these early lesions is imperative. These patients need all the bed rest that Dr. Amberson has outlined as necessary. However in our service rather than just assigning these patients to bed rest alone it is felt that additional valuable rest for the lung can be obtained by the use of a temporary phrenic paralysis. This procedure does not interfere with good visualization of the lesion and yet adds a definite rest factor. If after a month or more observation on the program of bed rest with a phrenic crushing the disease should show progress to more serious proportions, pneumothorax should be employed. The seriousness of these early lesions cannot be too greatly stressed.

DR. CHARLES H. COCKE, Asheville, N. C. One of the outstanding epidemiologic triumphs of medicine today is the gratifying drop in the death rate from tuberculosis. Honestly, however, compels the admission of the facts (1) that modern medicine is not altogether responsible for this drop and (2) that the morbidity of the disease has not shown a similar loss and the further fact that in certain age groups notably women from 15 to 30 years old tuberculosis is still the greatest single cause of death. The explanation of this paradox I feel resides in our lack of knowledge of the exact incidence and the degree

of infection in the second, third and possibly fourth decades of life. Much has been learned of the incidence of infection in school and college groups, student nurses and such related controllable groups but so far no one has evolved a solution at once economically possible and scientifically sound for application of our known methods of detection of tuberculosis to the entire population. When health preserved becomes as precious as health lost and the same efforts and funds are available to attain this end, perhaps we shall be somewhere near, or at least nearer, the solution of the problem of tuberculosis. I am delighted to commend Dr. Amberson's stand for the prolonged treatment of the early lesion, as well as his method of treatment. In the present wave of enthusiasm for compression and surgical procedures in the treatment of tuberculosis it is well to reiterate that surgical intervention does not cure tuberculosis any more than a splint cures a fracture, that all such measures are but means to an end of assisting nature to do what we as yet have not had the wit to accomplish by pharmacologic, chemical or serologic agents—cure tuberculosis. The only known specific, as has been preached for years, is rest, and yet this means many things to many minds. One of the greatest paradoxes of the disease is the disparity between symptoms, physical observations, and roentgen appearances. The solution can be reached I feel only by an evaluation of a fourfold approach to the problem: historical (which cannot be too greatly emphasized), physical (which may be fruitless but frequently lends suspicion in some minutiae), roentgenologic (which is still our mainstay and most valuable help), and laboratory studies (which aid greatly in evaluation of the process discovered by the other measures).

DR. FRANCIS M. POTTENGER, Monrovia, Calif. It is unfortunate, in dealing with tuberculosis, that health boards and specialists devise plans for examination and diagnosis which fail to give the general profession an intimate part in the program. Medical men in general should take the same interest in tuberculosis that they do in diseases of the heart, kidney and blood, for tuberculosis is a part of general medicine. There is neither mystery nor magic in its diagnosis. Any well trained physician can carry out the three simple measures of greatest value in diagnosis: (1) take a careful history, (2) have the sputum examined and (3) have a roentgenogram of the chest made. By making early diagnoses and at least understanding the principles of treatment, they can render as great a service to the tuberculous patients as to those suffering from other diseases. The reason specialists are dealing so constantly with far advanced tuberculosis is the fact that general medical men have largely excluded tuberculosis from their practice and failed to accept responsibility for it. They can and must accept the responsibility at least for diagnosis. We must not let the fact that specialists have devised means whereby they are able to produce healing in far advanced cases militate against early treatment. Far advanced patients are more or less handicapped for the future, and their treatment is unnecessarily expensive in both time and money. The only patient who can get well regularly and be fully competent is the one with the early or limited lesion. Dr. Amberson's point of view is sane. In private practice I make it a rule not to use any mechanical measure which carries with it the possibility of injury to the patient's respiratory mechanism unless I deem it necessary to his cure. In my relationship to indigent patients, however, I accept the necessity of interfering more frequently, because of the limited facilities for treatment at hand. Statistical proof is necessary however, before one can be certain that it is the best practice. Nearly all patients with limited infiltration in the lung can be restored to health by physiologic treatment alone. An important factor in determining the character of treatment to be employed, as well as the permanence of results, is the environment in which patients live, both during and after treatment. The case is very different for those who go back to a bad environment as compared with those whose surroundings are favorable. Those who treat tuberculosis are obliged unfortunately to handle the material that comes to them regardless of the extent of the disease, with the facilities with which they are provided, whether it is best clinical practice or not. There is danger, however, that results obtained under unfavorable conditions will influence one to advocate the same method under all conditions.

DR S A SAVITZ, Philadelphia It cannot be sufficiently emphasized that early diagnosis of tuberculosis at the present time is the most important procedure in controlling the disease. Great strides have been made in the treatment of advanced cases. Artificial pneumothorax, thoracoplasty and phrenicotomy are in a great measure responsible for the reduction of the mortality. Just as soon as the diagnosis is made at the very onset of the disease, the incidence and mortality will be reduced tremendously. It is strange that many of our present day trained physicians wait for pronounced symptoms, such as fever, cough and expectoration, even to suspect pulmonary tuberculosis. What is wrong? They are getting the best training in physical and clinical diagnosis from the freshman to the senior years, they are taught to correlate and evaluate symptoms and physical signs, they serve an internship in hospitals and attain practical experience to make them able men. Nevertheless many fail to diagnose tuberculosis at its early stage. I believe the principal reason is carelessness. At the Philadelphia General Hospital, where we house about 400 tuberculous patients, over 50 per cent on admission give a history that they have been treated for colds or something else not related to tuberculosis. I do not think that more headway will be made in the future until specialists properly instruct the general practitioner to be more careful and also instruct people in general to take better care of themselves. Periodic health examinations with an effort to diagnose tuberculosis in its incipient stage and our present day knowledge of thoracic surgery will, in my opinion, reduce the mortality and incidence of the disease to a minimum in the next ten years.

DR SAMUEL FRIEDMAN, New York Some patients with early or moderately advanced tuberculosis are not distressed by a cough sufficiently to call it to the attention of the doctor. When asked about a cough they may even answer "No." Particularly is the absence of a complaint about a cough true if the patient is suffering also from an associated painful disease, such as gastric or duodenal ulcer or renal or cardiac pains, the symptoms of which are so distressing as to mask the little annoyance of a slight cough or expectoration. Such early uncomplicated cases of tuberculosis are frequently overlooked or the patients are treated for bronchitis, and if this is associated with another distressing disease are treated only for the symptoms of the annoying coexisting disease. It is necessary never to ignore a slight or moderate persistent cough or expectoration. It is most advisable at times to stress the question X-ray and sputum analysis and a tuberculin test when in the slightest of doubt will save many a regret. On the other hand, it must also be borne in mind that there are some diseases the symptoms of which simulate clinically those of tuberculosis. I refer particularly to subterminal hyperthyroids. The patients may have fever, anemia, exhaustion, loss of weight or rapid pulse and may even have a cough because of the pressure of an enlarged thyroid against the bronchus. I have known several subterminal hyperthyroids and one normally located only slightly enlarged but hyperactive thyroid to be treated for tuberculosis over a long period. During the past three years I invited some of the best physicians and surgeons of New York and elsewhere to give lectures to groups of my patients on the subjects in which they specialized. The patients were much impressed with these talks, sitting eagerly through them for three or four hours at a time. Dr Baehr and some of the other speakers suggested that it would be a good idea to have this method of bringing these talks to the public generally adopted by the members of our profession. The patients demonstrated that they are really eager to learn. It is our task to guide them and teach them the laws of life and the danger signals of disease to keep them well and to help them recognize and treat their ailments early. I hope that in the near future every physician will realize the value of such educational talks to his own flock.

DR ESMOND R. I. The papers deal essentially with the underlying pathogenesis of tuberculosis, the early arrest and cure. The treatment is essentially constructive. The early cellular collections even in solid rather than liquid

in its location and that there is little fluid movement in the bronchi and relatively little absorption of products of either of tissue or of bacilli. Under such circumstances the symptoms result, and physical signs dependent on exudate liquefied tissue in the air passages are not present. In this stage is not sick, nor would physical examination in some routine way be likely to bring his trouble to light. However, he is in grave danger. His disease process is analogous to an unfired charge of explosive powder. Should the tuberculous tissue break down, all the elements are at hand for rapid spread. Tubercle bacilli are numerous in softening caseous tissue, and the bronchial channels permit immediate and extensive spread to healthy parts of the lung. With this spread of highly infectious material come cough, fever and the chain of clinical events characteristic of tuberculosis. The onset of the disease is naturally dated by the patient with the onset of the symptoms, yet the true onset antedated this symptomatic outburst by months or even years. Since the task of controlling the first or relatively symptomless stage of tuberculosis is far easier than controlling spread and repair of damage after softening and cavity formation have set in, we must have recourse to methods that detect tuberculosis in its earliest or symptomless stage.

THE ORAL ADMINISTRATION OF PROSTIGMIN IN THE TREATMENT OF MYASTHENIA GRAVIS

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Shortly after the introduction in 1934 of parenterally administered prostigmin in the treatment of myasthenia gravis, prostigmin given orally was also shown to be effective in ameliorating the symptoms of this disease. Administering doses of 30 mg by mouth three times a day, Everts¹ had encouraging results in two patients after two or three months of treatment. No untoward symptoms were noted. Only a few other reports have appeared: those of Schneider,² Laurent and Walker³ and Smith⁴ and a report from our clinic by Mitchell.⁵

It was soon found that 30 mg of prostigmin by mouth was about as effective as 0.5 mg given subcutaneously or intramuscularly. The ordinary dose by mouth therefore was from three to six tablets, of 15 mg each, a day. Laurent and Walker,³ beginning about June 1935, soon ran out of supplies of prostigmin to be given orally and had to substitute a similar drug known as Substance 36. About 50 mg of this drug by mouth gave an effect equal to that produced by 1 mg of parenterally administered prostigmin. In no case did they note unpleasant symptoms or aggravation of the myasthenic condition of their patients. Smith⁴ reported that in one case prostigmin was used orally "with even greater benefit than by injection." Mitchell⁵ observed nine patients, his results are incorporated in the present paper. No severe reactions were noted by any of the workers when prostigmin was

From the Department of Neurology, Massachusetts General Hospital.
1. Everts, William H. The Treatment of Myasthenia Gravis by the Oral Administration of Prostigmin. *Bull. Neurol. Inst.* 523:30 (Dec.) 1935.
2. Schneider, M. Elizabeth. Die Prostigminbehandlung der Myasthenie. *Monatsschr. f. Psychiat. u. Neurol.* 94: 123-131 (Oct.) 1937.
3. Laurent, L. P. E. and Walker, Mary B. Oral and Parenteral Administration of Prostigmin and Its Analogues in Myasthenia Gravis. *Lancet* 1: 1457-1459 (June 27) 1936.
4. Smith, William A. The Treatment of Myasthenia Gravis. *J. A. M. A.* 66:26-31 (Jan.) 1937.
5. Mitchell, Roger S. Experience with Oral Prostigmin in Myasthenia Gravis. *New England J. Med.* 216: 94-97 (Jan.) 1937.

given orally to patients with myasthenia gravis Goodman and Bruckner,⁶ however, noted severe symptoms due to poisoning when one of them (Goodman), a man in good health, took 45 mg of prostigmin orally in a single dose. There were vigorous tonic contractions of the muscles of the skeletal and visceral systems, presumably due to the inhibition of the normal esterase at the motor end-plate and the prolonged stimulation by acetylcholine, as noted by McGeorge.⁷ Goodman and Bruckner felt that, because of their experience, prostigmin should not be used for the present by mouth. The warning, as far as our observations and those of others⁸ are concerned, was unnecessary.

REPORT OF CASES

The eighteen patients whose brief case histories are given hereafter have been taking prostigmin by mouth continuously for from one to fourteen months. Some were known to us years ago, others have come to the clinic only recently. The former patients were treated in the past with aminoacetic acid, ephedrine and other drugs, often with considerable effectiveness. Since the advent of the prostigmin test of Viets and Schwab,⁹ the number of patients entering the clinic has greatly increased over former years, fifteen having been added from June 1936 to July 1937. This report covers the period from May 1936, when prostigmin¹⁰ was first administered orally by us, to July 1937.

CASE 1—J K K (Massachusetts General Hospital), an unemployed man, aged 70, first noticed ptosis of his right eye and diplopia in January 1935. A year later, dysphagia, regurgitation of liquids through his nose and ptosis of the left eyelid occurred, and chewing movements became weak. On a number of occasions he had to be fed by tube, and his condition was considered critical. In prostigmin tests in May and June 1936 he scored 32 and 37 points on the old scale.^{9a} Benzadrine and aminoacetic acid were tried without effect, ephedrine gave slight improvement. Prostigmin, given orally since May 1936, has effected a good and continuous remission. Dysphagia and dysarthria are largely controlled, ptosis and diplopia, partly so. The present maintenance dose is 15 mg of prostigmin taken nine times a day, supplemented with three-eighths grain (0.024 Gm) of ephedrine three times a day and from 10 to 15 drops of tincture of belladonna three times a day.

CASE 2—R S H (Massachusetts General Hospital), a salesman, aged 49, first noticed general weakness in the fall of 1935. About January 1936 he could hold up his head for only short intervals and weakness of his arms and legs forced him to give up an office position. Dysphagia and dysarthria, as well as diplopia, came on rapidly, and he entered the hospital in March 1936. His score in the prostigmin test was 68 points. Ephedrine and benzadrine gave partial relief. Oral administration of prostigmin was started in May 1936. The patient has regained some weight, and the dysphagia and dysarthria have in large part disappeared, but the weakness of the neck continues, necessitating support by a Thomas collar. The patient, although not able to work, is greatly improved, having progressed from a critical condition to one in which life is tolerable. He is able to come to the hospital at frequent intervals. His present maintenance dose is as follows: prostigmin, 15 mg nine times a day, ephedrine, three eighths grain (0.024 Gm) three times a day, and tincture of belladonna, 5 drops for each 15 mg of prostigmin.

CASE 3—M G (Massachusetts General Hospital), a woman, aged 76, noticed bilateral ptosis, dysphagia and weakness in chewing and in using her hand about April 1936. Her symptoms were worse after emotional stress and particularly late in the day. The result of a prostigmin test in June 1936 was reported as 70 points. Oral administration of prostigmin was begun at this time, and the patient reported by letter that she was "much better" in July 1937. Her maintenance dose has not been definitely determined.

CASE 4—M J M (Massachusetts General Hospital), a truckman, aged 62, first noticed ptosis in February 1934, followed by occasional attacks of diplopia in the next year. Dysphagia and dysarthria, coming on in the spring of 1935, led him to enter the hospital in July 1936. The score of his prostigmin test was 58 points. Unable to speak or swallow, he was first treated by intramuscular administration of prostigmin. Within an hour he could take 15 mg of prostigmin by mouth. During the next four months he improved only slightly with an irregular consumption of six tablets a day, with belladonna. Marked dysphagia and dyspnea developed, and he entered the hospital in October 1936, moribund. He was quickly revived again by intramuscular injection of prostigmin, and his oral dose of prostigmin was increased to eight tablets a day, with potassium chloride. In January 1937 his condition was good, he drove his automobile and had gained 25 pounds (11 Kg).

In the middle of February 1937 the patient had a cold and shortly afterward some difficulty in swallowing his prostigmin tablets. Three or four days after the onset his condition became decidedly worse. He entered the hospital February 22, showing marked dysphagia and dyspnea. Prostigmin, 45 mg injected intramuscularly, gave him considerable relief, but the effect of this drug did not continue, and on February 24 he died, showing respiratory embarrassment and elevation of temperature. There were no signs of pneumonia. No postmortem examination was allowed.

CASE 5—J B (Massachusetts General Hospital), an unemployed man, aged 20, was first seen in May 1932 with generalized muscular weakness of ten months' duration, associated with dyspnea, dysphagia and diplopia. He took ephedrine from 1932 to 1935, with moderate effect. Aminoacetic acid was used in 1935, with less effect than ephedrine. His condition became much worse, over a period of a few months, when he stopped taking both drugs. Injections of prostigmin in April 1935 caused marked improvement, and he continued taking two ampules, intramuscularly, a day until July 1936, when he changed to prostigmin by mouth. In his prostigmin test he scored 47 and 60 points on two occasions. Six tablets of prostigmin, 15 mg each, did not control his symptoms, and it was found that his maintenance dose had to be raised to twelve tablets a day, with three-eighths grain of ephedrine three times a day and 3 drops of tincture of belladonna three times a day. Taking this dose he is able to come to the clinic each month but is not able to work. He has no dysphagia or diplopia.

CASE 6—E H (Massachusetts General Hospital), a housewife, aged 27, had dysarthria, diplopia and dysphagia for four or five months before entering the hospital in March 1932. She responded slightly to ephedrine, and at times all the symptoms except the diplopia were nearly absent. During pregnancy she was much improved. She had a relapse three months after delivery. Seen again in August 1936, she had all her previous symptoms. In her prostigmin test she scored 45 points. Oral administration of prostigmin was begun in August 1936. Her maintenance dose is as follows: prostigmin, 15 mg, ten tablets a day, with tincture of belladonna, from 3 to 5 drops three times a day. Her condition is good.

CASE 7—F J R (Massachusetts General Hospital), a salesman aged 66 had dysarthria in 1932, lasting a week. In 1934 his condition became acute with weakness of the muscles of the neck, dysphagia, dysarthria, regurgitation of fluid through his nose and diplopia. In November 1934, while in the hospital, he began taking ephedrine and aminoacetic acid, with slight improvement. On four occasions he took physostigmine sulfate without effect. Potassium chloride and prephysin (Chappel) were also tried, the patient grew worse and returned to ephedrine and aminoacetic acid. In his prostigmin test he scored 49 points. In August 1936 he began taking prostigmin by mouth. His maintenance dose in July 1937 was as follows: prostigmin, 15 mg twelve times a day, with atropine sulfate,

6 Goodman Louis S and Bruckner William J. The Therapeutics of Prostigmin. A Warning Concerning Its Oral Use Based on a Personal Experience. *J A M A* 108 965 968 (March 20) 1937.

7 McGeorge Murray. Choline Esterase Activity in Disease with Special Reference to Myasthenia Gravis. *Lancet* 1 69 72 (Jan 9) 1937.

8 Thorner Melvin W. The Therapeutics of Prostigmin. *J A M A* 108 1449 1450 (April 24) 1937.

9 (a) Viets H R and Schwab R S. Prostigmin in the Diagnosis of Myasthenia Gravis. *New England J Med* 213 1280 1283 (Dec 26) 1935. (b) Viets H R and Mitchell R S. The Prostigmin Test in Myasthenia Gravis. Second Report. *ibid* 215 1064 1065 (Dec 2) 1936.

10 Part of the drug was supplied by Hoffmann La Roche Inc. Funds for this study, were donated by the F E Weber Charities Boston.

3/200 grain (0.3 mg) four times a day. At present he is able to walk, talk and swallow without difficulty. There is no diplopia. His general condition is good, but he could not return to his former occupation.

CASE 8—M T (Dr E M Cole), a woman, aged 53, a bookkeeper, first complained of general weakness and diplopia about January 1936. Her symptoms increased rapidly in July 1936, so that she could not lift her head from the bed. There were dysarthria, dysphagia and ptosis. All her symptoms grew more pronounced toward evening. In her prostigmin test she scored 68 points. Her maintenance dose is 15 mg of prostigmin six times a day and from 5 to 10 drops of tincture of belladonna three times a day.

CASE 9—F G (Dr J B Ayer), a housewife, aged 37, began to have the symptoms of ptosis, diplopia and general muscular weakness in 1923. Dysarthria was an added symptom in 1928. At this time she could not turn over in bed. With ephedrine and aminoacetic acid she improved in 1930. In her prostigmin test in 1936 she scored 52 points. She began taking prostigmin by mouth in August 1936, with better results than with any previous form of medication. Her maintenance dose in July 1937 is from six to eight tablets a day. Her condition, in spite of her long illness, is good.

CASE 10—M H (Massachusetts General Hospital), a woman aged 23, a student, acquired ptosis and diplopia about 1930. A year later the trunk and the extremities were involved. In 1932, during a relapse, she was confined to bed and had difficulty in swallowing. For about five years she has been taking ephedrine, with partial relief. She is worse during her catamenia. In her prostigmin test she scored 35 points. Her maintenance dose at present is prostigmin 15 mg eight times a day, with ephedrine, three-eighths grain, four times a day. She is very well, free from symptoms and able to work.

CASE 11—F E S (Palmer Memorial Hospital), a man aged 59, a physician, first noticed diplopia in 1932. It lasted a month, and no other symptoms appeared until June 1936, when dysphagia developed, followed by dysarthria, ptosis and mental depression. In his prostigmin test he scored 39 points in September 1936. He began taking prostigmin by mouth at that time. His maintenance dose is five or six pills a day and ephedrine, three eighths grain three times a day. Totally incapacitated at the time of admission to the hospital, he is now able to see a limited number of patients and drive his automobile.

CASE 12—J L P (Massachusetts General Hospital) a fireman, aged 52, first noticed ptosis and diplopia in December 1936. His symptoms were worse in the afternoon. There was no dysarthria, no dysphagia and no general weakness. The result of his prostigmin test with the revised score, was 46 points. The administration of prostigmin by mouth was begun in February 1937. His maintenance dose is eight pills a day with atropine sulfate 1/30 grain (0.4 mg) three times a day. He is now able to work.

CASE 13—F D (Massachusetts General Hospital) a mill-worker, aged 50, first noticed ptosis and diplopia in April 1936. He was worse in the afternoon. In his prostigmin test he scored 58 points. He began taking prostigmin by mouth in March 1937, and his maintenance dose in July was nine pills a day, with ephedrine three-eighths grain two times a day.

CASE 14—S J S (Massachusetts General Hospital), a housewife, aged 47, first had ptosis in 1933, with weakness of her neck. In 1936 there was weakness of her arms. Electromyograms and ergogram showed myasthenia gravis. Oral administration of prostigmin was begun in April 1937. Her maintenance dose is eight pills a day. She is moderately improved.

CASE 15—S S (Massachusetts General Hospital) a housewife, aged 62, had ptosis in 1936. It occurred again in the fall of 1937. It was relieved within a few months, and both symptoms were better in the afternoon. The result of her prostigmin test with the revised score was 35 points. Improved. Her maintenance dose is six pills a day.

CASE 16—L P R (Massachusetts General Hospital) a housewife, aged 22, began to have dysphagia in April 1936. General weakness and dysarthria in the afternoon. Ptosis was noted in June 1937. The result of her prostigmin test, with the revised score, was 50 points. Her initial dose was four tablets of prostigmin a day.

CASE 17—M K (Massachusetts General Hospital), a school girl, aged 14, began to have dysarthria, dysphagia and general weakness in the summer of 1935. In her prostigmin test she scored 49 points. Some improvement was noted while she was taking ephedrine. She began taking prostigmin by mouth in July 1937, her initial dose being four pills a day.

CASE 18—N G (Massachusetts General Hospital), a housewife, aged 46, first noticed diplopia in October 1934. Because of her hypertension the condition was thought to be due to cerebral hemorrhage. Ptosis developed in 1935. Her prostigmin test showed myasthenia gravis. Her initial dose of prostigmin was four tablets a day.

In the month of July three additional patients were seen in the clinic. They are doing well on prostigmin taken orally.

COMMENT

Dosage—Prostigmin is supplied in tablets of 15 mg each for oral administration. Our doses have been from four to twelve tablets a day. The initial dose is spaced at four hour intervals, usually four tablets a day. This dose is often too small to maintain muscular efficiency, and it must be increased to from six to twelve tablets in the twenty-four hour period. A maintenance dose, established in two or three weeks,

Name J K K	Unit # 63%	Date 5/11/37
	A.M.	P.M.
Medicine	8 9 10 11 12 1 2 3 4 5 6 7 8 9 10 11	10 P.M.
Pills		
Prostigmin	1	2 1 2 1
Drops		
Tr. Belladonna	8	8 6
Ephedrine	2	2

Dosage chart used in case 1

will average from four to nine tablets a day. This dose in thirteen of our cases is as follows: two cases, twelve tablets a day, one case, ten, three cases, nine, three cases, eight, one case, from six to eight, three cases, six. These doses have been maintained with slight variation from two to fourteen months: three cases, fourteen months, one case, thirteen, two cases, eleven, one case, ten, two cases, five, four cases, four, two cases, three.

For patients taking prostigmin by mouth, the spacing of the doses has been of considerable aid in maintaining muscular efficiency during the waking hours. With six tablets a day, the doses are taken at 6 and 9 a.m., 12 noon, and 3, 6 and 9 p.m. The dose may be doubled before meals, at 6 a.m., 12 noon and 6 p.m., making an intake of nine tablets, or 135 mg of prostigmin, a day for an adult. Thus, according to our experience, is the common maintenance dose for a severe case of myasthenia gravis. A few patients require two tablets at each of the six periods or twelve tablets a day. This dose has been taken by two of our patients (cases 5 and 7) for ten or twelve months. Unequal spacing in some cases may give the best results. In view of this fact we use a printed chart showing the hours from 8 a.m. to 10 p.m. in columns, with another column for the night. The drugs used are written in, and the chart is given to the patient, showing the time when the drugs are to be taken.

Effect—Thirty milligrams of prostigmin administered orally is, in most instances, equivalent to 0.5 mg of

prostigmin in a 1 2,000 solution given intramuscularly. The effect, however, is not so prompt and is less likely to be complete. The response comes in about one-half hour, reaches a maximum in one or two hours and wears off in three or four hours. During this period the paretic muscles regain their power in part or in whole. The visceral disturbances are variable. Some patients have none, others complain of considerable abdominal discomfort, diarrhea or a desire to evacuate the bowels. When disagreeable symptoms are induced by prostigmin given orally they may be controlled by tincture of belladonna in doses of from 3 to 15 drops or by atropine sulfate, $\frac{1}{200}$ grain (0.3 mg.) given with the prostigmin. Twelve of our eighteen patients took belladonna or atropine, the dose varying in amount with the abdominal discomfort. The visceral symptoms are often absent when only one tablet of prostigmin is taken at a time.

Patients with severe myasthenia gravis often have great difficulty in getting out of bed in the morning when the effect of the prostigmin taken the night before has worn off. A few patients have been awakened at 1 or 2 a. m. to take one or two tablets. Most of them take two tablets as soon as they wake up, either by themselves or with aid. For those who have difficulty in swallowing early in the morning, prostigmin is now being tried in suppository form. In the most severe cases an ampule of prostigmin should be at hand for emergency injection.

Adjuvant Drugs—In the last year many of the drugs used in the treatment of myasthenia gravis before the days of prostigmin have been experimented with as adjuncts to prostigmin. Those still in use by our patients are potassium chloride, ephedrine and benzedrine. A few patients think potassium chloride valuable in prolonging and "evening out" the effects of prostigmin. The drug, however, is gradually being given up. When three-eighths grain of ephedrine was added to the prostigmin, more than one half of our patients were improved. With it the patients have less abdominal discomfort, and often the amount of prostigmin can be reduced when ephedrine is taken.

CONCLUSIONS

Oral administration of prostigmin may be safely used in the treatment of patients with myasthenia gravis in daily doses of from three to twelve tablets of 15 mg. each. When ingestion of the drug is carefully spaced, patients maintain a reasonable degree of muscular efficiency, certainly better than with any other form of treatment. No ill effects were noted in eighteen patients treated from one to fourteen months. Other drugs may be added to the prostigmin regimen with benefit.

ADDITIONAL NOTE

Since this paper was written during the months of July, August and September, five new cases were added to the clinic.

CASE 19—E. A. (Massachusetts General Hospital), a housewife, aged 21, first noticed dysphagia in 1934, ptosis occurred in 1936. Her prostigmin test score was 32. Beginning with an initial dose of four tablets of prostigmin a day, she is now taking six tablets with symptomatic relief.

CASE 20—E. T. (Massachusetts General Hospital), a school-girl, aged 17, has suffered from ptosis, diplopia and ophthalmoplegia since 1933. Her prostigmin test was scored at 55 points. Under a dosage of four tablets a day with one occasionally in the evening, the patient is partly relieved of her symptoms.

CASE 21—T. E. (Massachusetts General Hospital), a man aged 53, first noticed ptosis and partial ophthalmoplegia in

the spring of 1937. His prostigmin test score was only 16. On four tablets a day there has been well marked improvement.

CASE 22—B. R. (Massachusetts General Hospital), a man, aged 48, first noticed diplopia and ptosis of the left eye eleven months before admission. He complained, however, of weakness in his neck and arms practically all his life. His prostigmin test score was 45. On five tablets a day there has been distinct improvement.

CASE 23—L. B. (Massachusetts General Hospital), a housewife, aged 66, first noticed weakness of her legs two or three years before admission. For about eight months she had had ptosis of both eyelids. Prostigmin given subcutaneously gave prompt relief of the ptosis. A dosage of from three to four tablets a day has resulted in partial symptomatic relief.

During the last three months, attempts have been made to reduce the amount of prostigmin and the adjuvant drugs. In one case the prostigmin was reduced from eight to five tablets a day and in three others a reduction of one or two tablets has been made without ill effects. In practically all the cases, moreover, atropine has been omitted and belladonna reduced to from four to eight drops, three times a day. Only one of our patients is now taking potassium chloride.

THE TREATMENT OF NEPHROSIS IN THE YOUNG CHILD

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AND

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The treatment of nephrosis, the chronic renal disorder so peculiarly prevalent in childhood and adolescence and of which the exact etiology is still quite obscure, offers many perplexing problems to the practitioner.

Aside from its chronicity, one of the most disconcerting characteristics is its tendency to alternate remission and severe exacerbation and its reappearance after long periods of apparent cure.

Although considerable progress has been made in the treatment of the condition, no form of therapy is really consistently successful or gives assured relief for the more troublesome symptoms. Outstanding among these and most alarming are the excessive, sometimes huge, losses of protein in the urine and the development of anasarca and ascites to a degree hardly equaled by any other condition affecting the child.

The albuminuria cannot be treated but can be overtreated, much to the harm of the patient when it is made the excuse for excessive limitation of the protein intake. Considerable changes in the protein content of the diet have little or no effect on the daily proteinuria. In this condition there is no need to worry about nitrogen retention in the blood on ordinary or even moderately elevated protein diets.

The edema in the nephrotic child is usually the special object of therapy and relief from it the chief concern. Rest in bed is always absolutely essential. Practically all hydrotherapeutic measures are feeble agents for the relief of edema.

Restriction of salt and fluid intake is of the greatest importance, will always affect the condition favorably and may give temporary or complete relief even though edema favoring factors such as persistent albuminuria

From the Department of Pediatrics, University of Chicago Clinics.
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and low plasma proteins may still be present or persist. Common sense and the general state of the patient must guide the rigidity of this restriction.

The fairly well nourished child, even with some edema, is better off than the child made edema free at the expense of gross emaciation. Excessive restriction of water in the young child may effect great hardship and is not without danger from the development of toxic states.

Practically all forms of diuretics, such as the purines, theobromine, the acid-forming diuretics and the mercurials, are entirely or relatively safe because the functional capacity and structure of the kidney are not essentially damaged, but their effect in nearly every instance is quite disappointing and practically never of sustained value.

Thorough removal of focal infections, especially about the upper respiratory tract, a procedure particu-

tional favorable reports appeared subsequently in *6 Hospital Reports* and the *Lancet*.

Osman and many others before him have found that some degree of acidosis is practically the rule in both acute and chronic renal disease. It has been quite definitely established that the accumulation of phosphate is probably the principal factor in the production of this acidosis. Not alone does there seem to be a decrease in the plasma bicarbonate in cases of nephritis, but there seems also to be an increase in alkali tolerance. There seems to be no direct relationship between the degree of acidosis as measured by the plasma bicarbonate and the severity of the symptoms present.

The procedure of high alkali therapy in renal disease is based primarily on some theories expressed by Martin Fischer over a decade ago, who held that the colloidal proteins of the body tissues and cells have the property of imbibing or parting with water with alterations in

Summary of Fourteen Cases of Nephrosis

Case	Sex	Age yrs	Type	Probable Duration	Chief Symptoms	Blood Urea Mg %	Maximum Diuresis Oz per Day	Total Weight Loss Pounds	Effect on Edema	Comment
1	♂	3	Chronic parenchymatous	1 yr	Anasarca ascites		70	10½	Cleared entirely	No edema or albumin well 1 yr later
2	♂	2	Chronic parenchymatous	1 yr	Anasarca ascites			3½	Cleared	No edema or albumin died from summer diarrhea later after recovery
3	♂	3	Acute parenchymatous	1 mo	Extreme anasarca and ascites					Edema and albumin cleared but patient died of pneumococcal peritonitis kidneys at autopsy normal
4	♀	4½	Chronic parenchymatous	6 mos	Anasarca, ascites	67	61	16	Cleared entirely	Edema cleared up but returned and then not controlled died no autopsy
5	♂	2½	Acute parenchymatous	3 mos	Anasarca anuria no ascites				Cleared	Treatment omitted at home readmitted 1 mo later anasarca anuria ascites died
6	♀	4	Chronic parenchymatous	3 mos	Anasarca ascites traces of blood in urine	12				No result from treatment continued to do badly and died no autopsy
7	♀	5	Chronic parenchymatous	2 yrs	Anasarca ascites	32	75		Cleared entirely	Relapsed 6 times in 4 yrs cleared up each time with treatment
8	♀	9	Chronic parenchymatous	11 mos	Anasarca ascites				Cleared	Edema cleared but patient died of pneumococcal peritonitis
9	♂	6	Chronic parenchymatous	6 mos	Extreme anasarca ascites	44	44	11½	Cleared entirely	No further treatment well 1 yr later
10	♂	13½	Chronic mixed symptom	10 yrs	Edema of face legs anasarca ascites	39	87	6	Cleared	No edema for 4 yrs most of albumin cleared blood urea increased lag improved
11	♂	7	Chronic parenchymatous	5 mo	Anasarca ascites	29	60			Remained free from edema for 4 yrs under treatment then died of pneumococcal peritonitis
12	♂	5½	Acute parenchymatous	wk	Anasarca ascites					No result from treatment died from tetany
13	♀	4	Chronic parenchymatous	1 yr	Anasarca		60	9	Cleared entirely	Well
14	♂	7	Chronic parenchymatous	1 yr	Anasarca ascites				Cleared entirely	Edema returned twice and twice cleared up with treatment
Results: Died 10 out of 14										

larly emphasized and championed by our late lamented colleague Marriott and his associates often is truly spectacular in its effect but again it will completely fail in case after case. Our experience with repeated blood transfusions has not been very striking.

Mechanical removal of excessive edema fluid often becomes imperative and will frequently have a very favorable effect on the whole condition and especially the reestablishment of an active diuresis.

All these procedures must be done with great care and under the strictest asepsis. I recall three cases in which a continual siphoning of ascitic fluid from the abdomen for a period of from three to four weeks effected a complete cure. A fourth patient died of pneumococcal peritonitis.

A few years ago, London published some results on the use of alkali in acute and chronic forms of nephritis. He advocated particularly the use of sodium bicarbonate in generalized anasarca and ascites.

the surrounding medium. Any change in the acid base relationships, such as alteration in the reaction of the medium and change from the iso-electric point, results in significant change in cellular water content and its distribution in the body. While the theories of Fischer have been criticized and are still controversial, there are some aspects of them which offer reasonable explanations of this peculiar action and the effect of alkalis in the treatment of some renal disorders.

It is more than probable that many of the biochemical disturbances found in the blood in nephritic patients are determined in part at least by the permeability or physical condition of the membrane of the renal cells. It is probably here that the explanation of the effect of alkalis in chronic renal disease must be sought. It is on the basis of some of these theories and concepts that Osman suggests his procedure. He believes that alkali may be used with advantage in many cases of nephritis under certain circumstances for either their prophylactic or their therapeutic value.

It is important to know the plasma bicarbonate level before treating a case of nephritis with alkalis

Cases of nephritis presenting edema, high albuminuria and low urinary volume are likely to derive the greatest benefit from alkalis given in amounts sufficient to raise the plasma bicarbonate to a normal level and maintain it at that point. In favorable cases a marked diuresis and subsidence of edema will occur when this point is reached. The output of albumin is generally greatly diminished, and it may in time completely disappear.

The acute or chronic parenchymatous or nephrosis type of renal disease with little or no structural impairment of the kidneys offers the most suitable case for this form of treatment. Also, however, it is useful in the treatment of mixed forms in which there is considerable structural damage and oliguria and edema with low plasma bicarbonate level. It is least effective in the chronic interstitial forms with hypertension, although even in these cases it may give some relief for excessive edema if the plasma bicarbonate level can be raised.

While this form of treatment in no way restores a structurally damaged kidney or stays a process operating to that end, one can expect with certain confidence a marked improvement or even complete regression of some of the distressing symptoms of the case, such as excessive edema, oliguria, anuria or excessive proteinuria, provided enough alkali is given to restore the plasma bicarbonate to a normal level and to keep it there.

The treatment often calls for truly heroic doses of alkali and is not altogether without danger. Overdosage must be guarded against by a periodic checking of the plasma bicarbonate. The alkaline salts are given by mouth until the plasma bicarbonate reaches a normal value, or in the absence of untoward symptoms they may be given even beyond this point. Confinement to bed is essential except in the mildest case, and the treatment is best carried out under hospital management.

Except in the presence of oliguria or hematuria, an ordinary mixed diet without restriction of protein or salt can be allowed. No excessive restriction of fluid need be imposed, although care must be taken that the fluid intake does not greatly exceed the fluid output.

The alkalis are given in the form of potassium citrate, potassium bicarbonate, sodium citrate and sodium bicarbonate, generally in equal quantities. Water is added and some flavoring agent, enough to disguise the taste. Syrup of orange or peppermint water and chloroform water are good agents.

The potassium salts are more effective in reducing edema and promoting diuresis than are the sodium salts, but the former are more dangerous on account of possible toxic action on the heart. The sodium salts, though less powerful, have much the same action. If used alone they cause more initial increase of edema than if used in combination with the potassium salts.

All the salts may cause some unfavorable effects, the bicarbonates tend to cause nausea and vomiting and the citrates often produce alarming diarrhea, especially in children. All these difficulties are best overcome by combining the salts as described. In cases of coma, the alkalis may be given by rectum as a 3 per cent solution

of the foregoing mixture. Intravenous therapy with the alkalis has been attempted but is not very successful and is technically difficult. During the treatment the total amount of urine passed in the twenty-four hours must be known, a record of the patient's weight must be kept and the reaction of the urine must be tested on early morning specimens.

The plasma bicarbonate should be estimated before the treatment is started and again at intervals during the treatment, especially if untoward symptoms supervene. For children the initial dose of the four alkalis in equal mixture is from 2 to 3 Gm or 30 to 50 grains three times a day. The following day this amount is given four times a day, or a total of from 8 to 12 Gm or 120 to 200 grains. Thereafter the dose is increased by 2 or 3 Gm a day until the p_H of the urine is from 7 to 7.6. Dosages of from 30 to 40 Gm or 500 to 800 grains a day, and even higher, may be reached with safety. The weight generally increases markedly at first and an extremely marked, even alarm-

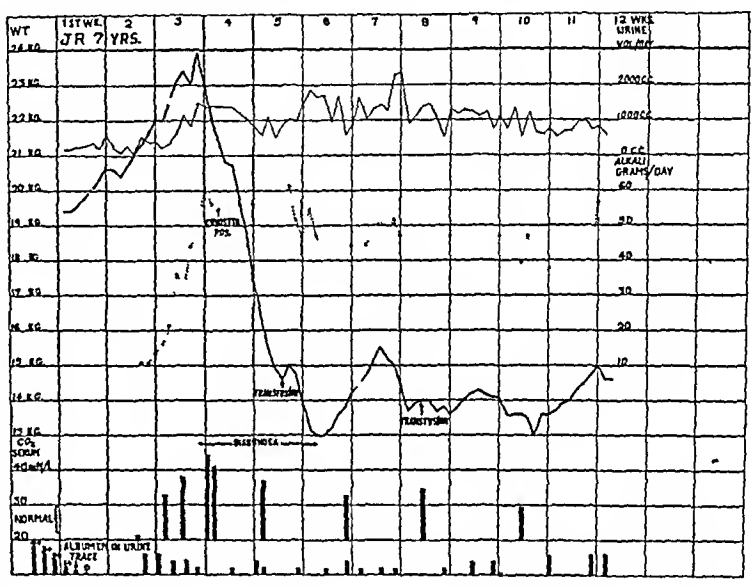


Chart 1 — Patient made complete recovery. Note marked diuresis at maximum intake of alkali.

ing, initial increase of the edema is practically a constant feature in all cases. Estimation of plasma bicarbonate at frequent intervals is necessary at this stage. In spite of the marked increase of the edema, it is necessary at this point to increase the dosage of alkali fearlessly until the plasma bicarbonate reaches a normal level or beyond and to keep the dosage continually high for some time, unless symptoms of toxic alkalosis, such as tetany, heart weakness or excessive diarrhea or vomiting, make a diminution of the dose especially of the potassium salts imperative. A remarkable diuresis usually sets in shortly after the height of the dosage has been reached, the p_H of the urine is between 7.6 and 8.3 and the plasma bicarbonate is at normal level or above. This diuresis usually continues and often in an amazingly brief time causes complete loss of edema, marked diminution or complete disappearance of albumin from the urine and great reduction in lipemia.

Three dangerous symptoms must be looked for and guarded against at this stage of the case. Tetany and even convulsive seizures may develop. Symptoms of dangerous heart weakness may appear or excessive vomiting and diarrhea may develop. Tetany can be

prevented or usually relieved by the repeated intramuscular use of calcium chloride in a dosage of 0.05 Gm. For the heart weakness and excessive diarrhea a diminution of the alkali, particularly the potassium salts, is advisable and often imperative. It is seldom necessary to reduce the dose by more than one third of the maximum amount, and it is often sufficient to reduce only the potassium salts. We have found it necessary to reduce these sharply in the face of dangerous symptoms.

Even in the face of threatening dangers, the success of the treatment depends on a bold and fearlessly continued use of relatively high doses of alkali. When active diuresis has set in, it is unnecessary to increase the alkali further, but the high dosage must be maintained at all costs until the edema has entirely disappeared and the volume of urine has gradually fallen to normal. It may take from ten days to several weeks before this is accomplished, but the dose must not be reduced before this stage is reached. Any reduction commonly leads to a return of the edema, albuminuria, oliguria and even complete anuria. The latter condition is liable to occur if all alkali is withdrawn rapidly or completely.

After the urinary volume has returned to normal, a gradual reduction of the dose may be effected. Any return of the symptoms must be met at once by a resumption for at least a few days of the maximum dose. A substantial dose of alkali should be continued for a considerable period after all edema has disappeared and the urine has cleared entirely of albumin, in order to insure against return of active symptoms.

The high alkali treatment will not relieve every case of nephrosis, but it will almost certainly relieve the troublesome edema and reduce or stop the proteinuria. It cannot prevent or significantly modify the serious complications such as pneumococcal or streptococcal pneumonia or peritonitis or cellulitis, but there is no

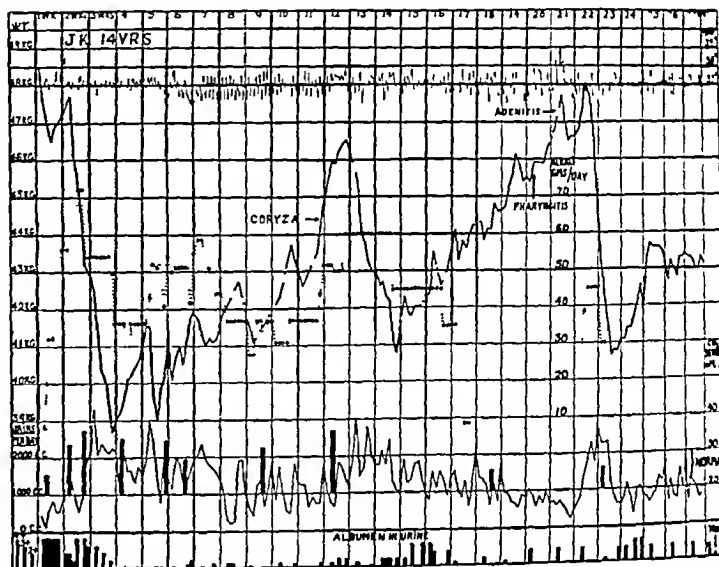


Chart 3—Patient eventually completely recovered but shows the relapses due to severe intercurrent infections

doubt that the removal of edema fluid from the tissues must afford a considerable measure of protection against the development of these infections.

In a series of forty cases reported by Osman, thirteen patients with nephrosis ranged in age from 2 to 7 years, one with a mixed form of the disease was over 13 years. In nearly all the cases the disorder had

existed from six months to over a year and was characterized by excessive anasarca and ascites. Of the fourteen cases, five were completely cured, one was permanently improved and eight were fatal. Three of the deaths were due to pneumococcal peritonitis, one patient died from tetany and one from intercurrent summer diarrhea after recovery from the renal disorder. Two died from relapses after initial success with the treatment and one died without showing any response whatever to the treatment.

Our series at the Bobs Roberts Hospital comprises seven cases. Of these, three of the patients have apparently completely recovered except that in two of the cases a moderately severe infection of the upper respiratory tract, especially acute sinusitis, is followed by a slight transitory return of the edema. Two of the patients have been free from all symptoms for a period of more than three years.

Of the four cases which were fatal, only two were really true cases of nephrosis as shown by autopsy. Two were of the mixed form, showing extensive renal damage. All of them had shown considerable edema before admission to the hospital. Two patients died of pneumococcal peritonitis which developed shortly after their admission to the hospital and before the high alkaline treatment had been well started although in one of the cases marked diuresis had set in. The

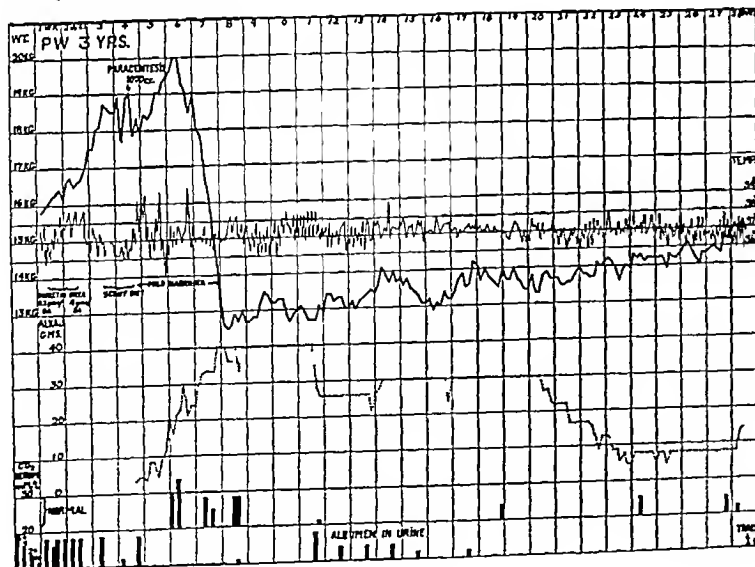


Chart 2—Patient had apparently made complete recovery but eventually succumbed to an acute hemolytic streptococcus infection

Estimation of the plasma bicarbonate is probably the best check on favorable or unfavorable response to the treatment. It is commonly found that, if treatment is omitted or improperly managed before the "cure" is complete, a much larger dose is required in a second attempt to secure the same result if it can be obtained at all.

third child died from heart failure within forty-eight hours after admission to the hospital and before effective therapy could be started. The fourth patient, one with true nephrosis, had responded remarkably and repeatedly to the treatment and had apparently completely recovered when a hemolytic streptococcus throat infection suddenly developed, followed by pneumonia and general peritonitis, death occurred within a week after the onset of the illness. Autopsy was refused.

Except for the prompt treatment of minor infections and reasonable supervision of the diet, no particular management seems to be necessary once the patient has recovered.

The favorable experience that we have had in the few cases in which this form of treatment could successfully be inaugurated and followed seems to confirm the favorable results reported by Osman and led us to believe that the use of the high administration of alkalis is probably one of the best forms of therapy available for the treatment of chronic nephrosis and the relief of some of its most troublesome symptoms and should be attempted in all cases that do not readily yield to less drastic measures.

ABSTRACT OF DISCUSSION

DR. A. GRAENE MITCHELL, Cincinnati. One of the most important considerations is to determine whether the patient has what the authors referred to as pure nephrosis. I believe there is such a condition although I think it is difficult to diagnose, and often it can be distinguished from nephritis only after long observation. I have always been discouraged with the treatment of nephrosis. It has given me a feeling of futility. In Cincinnati my colleagues and I have made a definite attempt to try to find out something about it. Over a period of some years we have kept in the metabolism ward several patients suffering from what we originally thought was nephrosis. We discovered later that in some instances the patients had a true nephritis. The most important fact that I discovered was how much it costs to run a metabolism ward. Secondly, we came to the conclusion that we really knew little about what to do for the patient with nephrosis. Theoretically, the condition has bothered me tremendously. The arguments that have led to acid therapy and, on the contrary, to alkali therapy have never been entirely clear to me. Practically, I have sometimes felt that a patient who did not respond to acid therapy would sometimes respond later to alkali therapy or that the reverse of this might happen. After considerable observation I came to the conclusion that the patient did his tricks of retention or loss of fluid on the same regimen and that what I was doing had no particular effect, so that in my innocence I felt that I was doing rather little to help. It is obvious that the authors have been more courageous and more persistent in alkali therapy than I have been and perhaps that is the reason they have obtained results. The danger of alkali therapy should be stressed. I have reached the point where I feel that alkali should never be given unless one has the opportunity to observe the patient under controlled conditions. Close clinical observation is not enough since it is difficult if not impossible, at times, to distinguish alkalosis from acidosis. Alkali therapy, then, should be carried out only when one has the opportunity to determine frequently the carbon dioxide content of the patient's blood. I have had in the last year four infants with alkalosis on the basis of alkali therapy. Three of these patients died.

DR. FREDERIC W. SCHLUTZ, Chicago. I quite agree with Dr. Mitchell that it is difficult to tell whether one is dealing with a case of true nephrosis or some other form of nephritis. The clinical picture largely must guide one. No claim is made that the alkali therapy will benefit every form of nephritis. It has been the experience, however, of Osman and also our own that it will benefit any case of nephrosis or nephritis in which there is a great deal of edema and proteinuria. These two symptoms are always markedly benefited by the treatment, and particularly so in the nephrosis case. Every one who uses the treatment will be startled by the rapid increase of edema

above the amount at the start of the treatment. It seems as though one is doing the patient more harm. It is most important to remember that one must fearlessly increase the salt intake and certainly persist in the use of large amounts in the face of this increase. Only decrease the salts when dangerous symptoms supervene. These are marked diarrhea, evidence of cardiac weakness and major manifestations of tetany. A moderate showing of tetany need give no alarm. It is the potassium salt that must first be reduced and sometimes the only salt that needs to be reduced. It is always necessary to check the plasma bicarbonate when using this treatment. If the plasma bicarbonate approaches normal or slightly above normal levels, the treatment is usually adequate and favorable symptoms will develop. Unless toxic symptoms supervene, the salt mixture can be fearlessly increased until the plasma bicarbonate level approaches normal. This form of treatment should not be carried out in any case of nephrosis or nephritis unless the plasma bicarbonate can be checked at frequent intervals.

MUCOSAL PATTERN TECHNIC AND KYMOGRAPHIC RECORDS OF THE ESOPHAGUS AND STOMACH

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Two newer methods of roentgen technic, useful in gastro-intestinal diagnosis, have enjoyed extensive exposure in the literature of roentgenology and on programs of roentgen societies. It is proposed to expose these methods to the members of the general profession and, at the same time, to inquire critically into their values.

The mucosal pattern, the relief picture or the compression technic of the mucous lining of the gastro-intestinal tract is secured by fluoroscope or roentgenogram after manipulation and gravity have adapted a thin, mucilaginous, opaque medium to the mucosal folds of the esophagus, stomach or small or large intestine. It is a study of the intimate morphologic detail of the mucosa. The regular, bulkier barium sulfate meal provides the diagnostic factors of contour and function and will provide conclusive diagnostic facts in a major portion of appropriate cases. The mucosal pattern technic amplifies the routine examination in certain details of the actual ulcer and cancer or characteristic diagnostic patterns, such as esophageal varices or chronic gastritis.

There are inherent dangers to the roentgenologist in the mucosal pattern technic because of the prolonged exposure of the fluoroscopic studies which may be necessary to secure or identify the favorable filling or pattern which he wishes to record permanently by the roentgenogram. Sometimes this danger is greatly increased among physicians who complete their own roentgen examinations, because they fail to impose on themselves the requirements of eye accommodation, because they do not have the apparatus that roentgenologists know is essential for success with this method and, more pertinently, because they lack a studied familiarity and experience with normal and abnormal mucosal patterns.

Special apparatus is required (1) so that the favorable mucosal pattern can be achieved by compression, position and posture and (2) so that the small, aimed roentgenograms are secured at the right instant. It must be possible to switch from fluoroscopic image to proper radiographic technic instantly. The expense of

this technical requirement seems to preclude the adoption of this technic by others than roentgenologists.

There are, however, two particular situations in gastro-intestinal diagnosis in which the mucosal pattern technic can be useful without special apparatus or extensive roentgen education. The vagaries of actual and artificial pattern fillings throughout the gastro-intestinal canal are such as to impose great responsibilities of study of and experience with normal and abnormal mucosal patterns on every physician who would pursue these examinations. Undoubtedly the method may be reserved to the skilful roentgenologist and to the gastro-enterologist whose mental and mechanical equipment for roentgen diagnosis rank with those of the qualified roentgenologist.

These two situations of practical and easy application of pattern technic involve (1) the lower end of the esophagus and (2) the general mucosal pattern of the stomach.

Esophageal varices produce a characteristic shadow of uneven, tortuous mucous membrane. The normal esophageal mucosa shows long, thin, evenly spaced lines running parallel throughout this lengthy tube. The ordinary heavy barium sulfate meal masks both the normal and the abnormal mucosal pattern. Any thin, mucilaginous opaque mixture swallowed by the patient while in a favorable, prone, esophageal position on an x-ray table will secure the roentgen details by fluoroscope or roentgenogram. It is not an evanescent, transitory pattern because it can be identified by succeeding films as long as the barium mucilage remains in the esophagus. No particular opaque mixture is required, although there are American proprietary products that are extremely smooth and easy to use. There is no necessity for advertised foreign opaque mixtures.

The mucosal pattern of esophageal varices is produced by the enlarged tortuous veins protruding into the lumen of this tube. The lumen may be widened if the varicose condition is extensive. Varices can be pressed out by peristalsis and by increased intrathoracic pressure. Cancer and ulcer are easily differentiated from this characteristic varicose pattern by the usual extensiveness of the varices and the limited area of cancer or ulcer. The normal thin mucosal lines of the esophagus persist with cancer or ulcer except at the limited area of new growth while with varicose patterns the only normal lines are at the upper part of the esophagus. Varices are usually encountered with cirrhosis or fibrosis of the liver. Unrecognized cirrhosis has been inferred from this isolated and characteristic x-ray shadow. Esophageal varicosis is not an infrequent condition. One roentgenologist (Schatzki) found forty-five cases in two and one-half years.

Chronic hypertrophic gastritis provides enlarged, deep, stiff, thick rugae. Such rugae may be normal at the greater curvature of the pars cardica and media but are usually diagnostic of chronic gastritis at the pars pylorica and at the lesser curvature. Differential diagnosis is required for lymphoblastoma or cancer. Polypoid growths protrude into the gastric lumen. Increased mucous secretion produces a marbled appearance of the gastric contents. Nonopaque food residues and air bubbles offer little difficulty to the experienced eye. Extensive ulceration of the stomach is rare. The isolated ulcer or cancer is recognized by the identification of the lesion amidst an otherwise normal mucosal pattern.

Again, one can achieve this characteristic gastric diagnosis of enlarged, deep rugae by a thin mucilaginous opaque meal that is allowed by posture and compression to adapt itself to the gastric mucosa. Rolling the patient, forced breathing and moderate compression easily provide the pattern picture when roentgenograms are taken with the patient in favorable postures, both with and without pressure technic.

That I have focused attention on two particular uses of mucosal relief technic does not mean that its usefulness is thus confined. The point is that its usefulness beyond these two situations is reserved for the roentgen specialist who is equipped with experience, apparatus and training in the vagaries of the normal gastric and intestinal mucosa. The time required to complete the mucosal relief examination places it beyond or outside routine roentgen examinations. It is reserved for duodenal ulcers which are very small, for cases which offer technical difficulties of spasm, debatable niche formation, and for cases of stout or spastic type. Even among experts using this method there is the debatable field of active ulcer niche and healed scarr, especially in the duodenum.

Kymography contrasts with the mucosal pattern technic in that it is entirely a record of function exhibited at a chosen margin of an organ. It is particularly useful for the study of the pulsating margin of the heart and aorta. There are many inherent errors and difficulties. The task of interpretation requires meticulous attention to shadow margin, and the personal equation of the roentgenologist looms large. Again, special apparatus is required. This fact, and the demands of special interpretation, seem to make kymography essentially the function of the qualified roentgenologist.

Kymography consists of placing a moving slit grid between the patient and the film during an exposure of an arbitrary time period. One must study the resulting surrealist exposure with caliper and rule to compare the recorded movement displayed by toothlike serrations at various, identified, moving margins of an organ. The cycle of cardiac movements is usually completed within a second plus, the patient can hold his breath and avoid the imposition of shadows of respiratory movements on cardiac movements.

The gastric motility is normally twenty-two seconds and therefore respiratory and cardiac movements must be subtracted from the essential gastric movements. This subtraction is very difficult. The value of kymography in gastric diagnosis would be for the study of the muscular movement of a portion of the wall where one suspected an early cancer. The method requires that the particular area be recorded by kymography in profile. Gastric peristalsis must be functioning at the time, the opaque filling must be generous and perfect, the subtraction of respiratory movement may be possible, but cardiac movement is persistent during the briefest period of any practical gastric kymograph. Kymography, being a record of function or movement must persist over a sufficient period of gastric peristalsis to permit analysis by mensuration of the movement of shadow margin. The method has no advantages over the fluoroscopic study of motion in the presence of a grossly visible ulcer or cancer. There are no advantages over the mucosal relief technic for the small lesion. The only advantage that kymography would add to diagnosis of early cancer is the study of the mucosal area in the gastric outline. This area is comparable to the area in the ventricular or auricular wall that I

lost its usual muscular activity owing to extrinsic adhesions (cardiolysis) or intrinsic loss of tone (coronary infarction)

While there are no dangers to the roentgenologist in kymography of the stomach, there are the dangers to the patient of cutaneous reactions from the length and strength of the prolonged exposure required. Ordinary 1 mm aluminum protection to the radiographic x-ray beam is not sufficient.

Enthusiasm for gastric kymography is not warranted. The theoretical possibilities are overshadowed by actual dangers of technic and physiologic embarrassments to interpretation.

These brief but critical objections to gastric kymography must not be confused with disparagement of the practical values of cardiac kymography. Cardiac kymography has many useful purposes and carries no dangers to patient or operator. It has been exposed by many excellent articles to the general and specialty groups. It was my enthusiasm for cardiac kymography and my hope for a method of estimating muscular embarrassment at small portions of the gastric wall in cases of early gastric cancer that led me astray. The mucosal relief study fails to identify movement and depends on actual morphologic defects. Gastroscopy enters the field of early diagnosis of gastric cancer with the best wishes of those who hope for positive identification of the lesion at a period when its complete ablation is a surgical practicality in a larger group of cases than seems possible now.

Professional Building

ABSTRACT OF DISCUSSION

DR LESTER LEVIN, Buffalo. Hirsch, Moore and Scott have shown the method to be of great value in the diagnosis of obscure cardiac lesions, but only a negligible amount of work has been done on the gastro intestinal tract, particularly in this country. So far as the stomach is concerned the method is strictly in the experimental stage. The kymographic records are complicated and little is known about even the interpretation of the normal. Experience has been entirely too limited. I would hesitate to attempt to make a diagnosis of early carcinoma of the stomach by kymography that could not be made by our present methods. I am, however, optimistic about its future, and feel that within the next few years it may prove to be a procedure capable of detecting lesions earlier than can be done at this time. The study of the stomach and the esophagus by the mucosal relief method should be a routine procedure with every roentgenologist. Esophageal varices are diagnosed only rarely by a complete filling of the esophagus with barium sulfate. This is due to the fact that varices are hidden by the density of the opaque meal. The varices, however, certainly are more common than suspected and are more easily demonstrable when careful technic is carried out by the relief method. The veins are seen to project tortuously into the lumen of the esophagus. One should rarely miss esophageal varices when the relief method is employed and painstaking technic is required. Concerning chronic gastritis, the roentgen mucosal method may show the change that occurs in the hypertrophic variety in a fairly large percentage of cases, but it must not be forgotten that chronic gastritis may be present without any deviation from the normal in the mucosal pattern. When considering the question of atrophic gastritis, one is stepping on rather dangerous ground when one attempts to diagnose that condition, because the thin mucosal folds that may be indicative of atrophic gastritis are often seen in perfectly normal persons and also in certain persons suffering from blood dyscrasias, particularly pernicious anemia. The study of the rugae may disclose the presence of a peptic ulcer that may escape detection entirely when the usual contrast meal is given and, likewise occasionally, in relatively early carcinoma. Dr Skinner's paper is valuable because he has so strongly stressed the advantages of study of the mucosal pattern. It often con-

firms or establishes a diagnosis when the large contrast meal fails to do so. It is, however, advisable to conduct gastrointestinal examinations by both methods.

DR WENDELL G SCOTT, St Louis. Dr Skinner has ably surveyed the field of kymography in the study of gastric lesions. Dr Sherwood Moore and I have used the method in a few cases. The kymographic method in gastro enterology is limited by the slow movements of these structures and by the long exposure time. The method at this stage is not a practical clinical procedure. It can be used for experimental work, particularly in a painstaking investigation of the movements of the rugae, gastric silhouette and duodenum.

YELLOW BONE MARROW EXTRACTS IN GRANULOCYTOPENIA

PRELIMINARY REPORT

C M MARBERG, PH D
AND
H O WILES, PH D
CHICAGO

At the Milwaukee session of the American Medical Association, in 1933, Dr C H Watkins of the Mayo Clinic announced that he had obtained favorable results on treating patients suffering from granulocytopenia with yellow bone marrow. He reported that a monocytosis first occurred, which was followed by a gradual increase in polymorphonuclear neutrophils. Usually a reaction occurred within twenty-four to forty-eight hours after ingestion of the bone marrow. An account of this work has not yet been published by Dr Watkins.¹

Shortly after this announcement Dr M J Flipse of Miami, Fla., also obtained very encouraging results with the marrow but found that the large dose which is necessary was undesirable, and it was through his suggestion and that of Dr Fenger of Armour & Co that we sought to prepare an extract which would be free of the large amount of fat that is present in the refined marrow. Such a concentrate was prepared by extracting the unsaponifiable portion of the marrow and dissolving it in a bland oil for oral administration. The equivalent concentration of 2 Gm of marrow per drop has been found quite satisfactory for clinical use.²

There being as yet no satisfactory method for producing agranulocytosis in experimental animals, it has been necessary to test the activity of our preparations on the occasional clinical cases that have been available. We are greatly indebted to the physicians who have cooperated with us in this phase of our work.

Up to the present time the extract has been administered to twenty patients with granulocytopenia, and in all but seven there has been a rise in the number of granulocytes, usually with a return to normal figures. In fact, if active infection persists during the period of treatment the granulocytes may rise to figures far above normal. Of the seven patients who did not give a satisfactory response, two were later found to have

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¹ Dr Watkins has published an account of the use of bone marrow in anemia (J A M A 95:587 [Aug 23] 1930) in which he reported a remarkable response in one case of agranulocytic angina.

² Recently there has appeared a paper by Joseph Zichus (Granulocytopenic Fractions of Yellow Bone Marrow, J Lab & Clin Med 22:231-237 [Dec] 1936) the data of which indicate that he partially saponified the marrow removing only part of the fat. He does not acknowledge our prior work (paper read before the Medicinal Section of the American Chemical Society, Cleveland, Sept 11, 1934) which was reported in preliminary form in 1934. His experimental work and method of testing which was carried out on rabbits will be criticized in more detail when this work is published in full.

aplastic anemia, in four a differential diagnosis was not made, and the last had diabetes and appendicitis in addition to the granulocytopenia. The rise in granulocytes usually begins within twenty-four to thirty-six hours, as contrasted with the effect of pentnucleotide, which is not usually manifested in less than from four to five

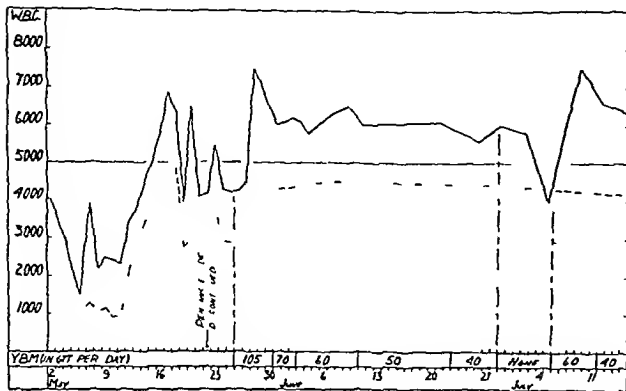


Chart 1 (case 1)—Response of leukocytes (solid line) and neutrophils (dotted line) to yellow bone marrow

days. We are informed by Dr. Flipse, who has used our concentrate in several cases, that he has obtained similar results.

To illustrate the characteristic effects of the bone marrow extract, brief abstracts of two typical cases are presented.

CASE 1—Miss E. D., a patient of Dr. Maurice Simkin, was diagnosed as having "agranulocytic angina." Chart 1 indicates slight but transitory response to pentnucleotide together with liver extract and "extralin." The patient objected to her reactions to pentnucleotide, saying that she would "rather die than have another injection," whereupon all medication was discontinued in favor of yellow bone marrow. Two enteric coated capsules (0.5 Gm each) of the nonsaponifiable residue were given each of two days. There was no response. It was later learned that the capsules were too heavily coated and would not open in the gastro-intestinal tract. When the oil solution was used orally a prompt response was obtained—within thirty-six hours—and a maintenance dose could be established. When the extract was discontinued the count fell immediately but increased rapidly again on resumption of

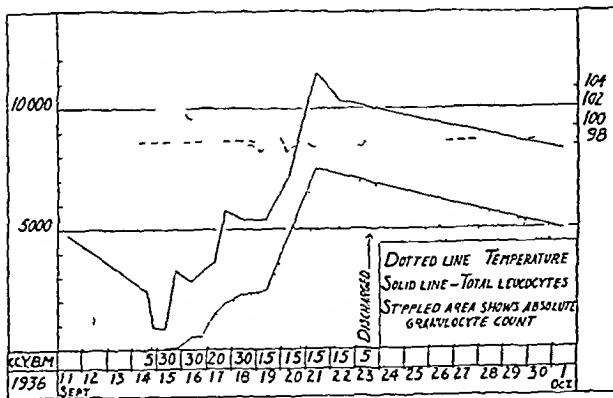


Chart 2 (case 2)—Response to administration of yellow bone marrow

medication. The granulocyte/lymphocyte ratio also became normal on extract therapy. Clinical improvement was coincidental with the improvement in the blood picture and she was discharged. The patient had a recurrence in March 1937 but improved rapidly when given the extract. A response almost identical with the responses recorded in chart 1 was obtained and the angina cleared up within seventy-two hours; the leukocyte count rising from 3500 to 7500 on medication with the extract.

CASE 2—Mrs. M. J. had been seen occasionally in the patient service of the Chicago Lying-in Hospital with a complaint of menorrhagia and dysmenorrhea. She had been taking a proprietary medicine containing aminopyrine for the latter. When examined Sept. 11, 1936, she showed no remarkable symptoms except those mentioned. The leukocyte count was 4,800 (chart 2).

She was admitted for treatment September 14 with acute tonsillitis and pharyngitis, a temperature of 104 F and a leukocyte count of 2,400, which fell later to 925. A diagnosis of probable agranulocytic angina was made and yellow bone marrow extract therapy was begun immediately; no other hematopoietic stimulant was given.

The following morning the count was between 700 and 1000 white blood cells (3 per cent neutrophils) but had risen by evening (twenty-four hours from the beginning of treatment) to 3,300 white blood cells, 83 per cent lymphocytes, 12 per cent monocytes, 1 per cent metamyelocytes, 2 per cent band forms and 2 per cent segmented neutrophils. The temperature had fallen to normal by September 17, clinical improvement followed immediately on the improving blood picture. The peak of the bone marrow response was reached September 21 with 11,500 white blood cells and 65 per cent neutrophils of which 52 per cent were segmented, 12 per cent band form and 1 per cent myelocytes and metamyelocytes. The patient was discharged in good condition September 23. Subsequent blood counts were within normal limits.

A more detailed report of the chemical work and clinical observations will be presented in a subsequent paper.

THE DIAGNOSIS AND TREATMENT OF UNDULANT FEVER

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AND

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The purpose of this paper is to discuss briefly the diagnosis and treatment of undulant fever. Time does not permit a full review of all the therapeutic measures which have been offered, therefore our remarks will be limited mainly to a further discussion of the use of intravenous injection of killed typhoid and paratyphoid organisms in the treatment of this disease.

The diagnosis of undulant fever is dependent on the laboratory for final confirmation. In this connection certain diagnostic problems confront the physician. The patient may present some of or all the classic symptoms, namely, irregular fever, profuse night sweats, weakness, nervousness, epigastric pain, muscle vomiting, arthralgia and, in addition, some complication, such as involvement of the central or the peripheral nervous system or suppurative arthritis, and yet the blood may show no agglutination for organisms of the brucella group. This negative reaction may be due to the insufficient lapse of time for the development of specific agglutinins. The length of time varies widely, usually from two to several weeks. However, the agglutination may never at any time become positive.

A positive agglutination reaction must always be correlated with the symptoms and physical signs shown by the patient. There are numerous reports in the literature of the presence of *Brucella* agglutinins in the blood of persons who have no other evidence of disease. One of us (Hunt)¹ in a study of 1,000 un-

From the Departments of Medicine and Clinical Laboratory at Geo. F. Geisinger Memorial Hospital.
Read before the Section on Pharmacology and Therapeutics at the Eighty-Eighth Annual Session of the American Medical Association, Atlantic City, N. J., June 9, 1937.
1. Hunt, H. F., and Nell, M. E. A Study of Native *Brucella* in Human Blood Sera from Virginia. *M. J.* 10: 433-435 (1937).

lected samples of blood found 89 per cent of the serums to agglutinate specific *Brucella* antigens in a dilution of 1/80 or above. An analysis of clinical and other laboratory observations on this group of patients will be published at a later date. One can only conjecture as to the origin of such agglutinins. Many theories have been advanced to explain their presence in the blood of apparently normal persons, but to date none of the theories have been definitely proved or accepted. Veterinarians, packing house workers and breeders of live stock often are found to have positive agglutinins in their blood. Their presence is thought to indicate a past infection or recent exposure to infected materials.

The determination of opsonocytaphagic power of the blood for *Brucella* is another laboratory procedure that may be employed in the diagnosis of undulant fever. A fresh bacterial suspension prepared each day from a pure culture of organisms of the *Brucella* group is essential for this test. Any one of the three specimens of *Brucella* is suitable, but the cultures should be checked frequently for "fastness" to phagocytosis. It occasionally happens that strains of *Brucella* tend to become fast to ingestion by cells.

Huddleson, Johnson and Hamann² have reported a method for determining the opsonocytaphagic power of the blood which is a modification of the Leishman³-Vetch⁴ technic. The method of recording phagocytic activity as outlined by the first mentioned authors consists of counting a total of twenty-five cells in different sections of the spread and recording each cell as follows: negative when no phagocytosis occurs, slight when from one to twenty bacteria are seen in the cell, moderate when from twenty-one to forty bacteria are seen in the cell and marked when the number of bacteria in the cell is above forty.

The interpretation of the results obtained by this test in the hands of the inexperienced may be as misleading as the results of the agglutination test. A more detailed report on this procedure will be found in Huddleson, Johnson and Hamann's² article and in Huddleson's⁵ monograph on "*Brucella* Infections in Man and Animals."

Blood culture is helpful in many instances but as a diagnostic measure is slow. Special equipment is required and will not be found in many laboratories. The absence of leukocytosis is helpful. In fact, there may be leukopenia. We have usually found a normal differential count.

We believe that the intradermal test either with a *Brucella abortus* vaccine in a 1/10 dilution or with soluble nucleoprotein fraction of similar origin is helpful in diagnosis. The reaction must be regarded as negative unless it remains positive for a week or ten days (fig 4). Frequently the reaction remains positive for eight or ten weeks, and the fading mark may be visible for a year. Too strong a solution is to be avoided lest central necrosis develop at the site of injection. The intradermal test depends on tissue sensitivity induced by the presence in the body of organisms of the *Brucella* group. A positive reaction may result from frank *Brucella* infection or from

repeated small infections inadequate to produce fever. So, too, this test is invalidated unless it is supported by active symptoms.

Enthusiasm for making a diagnosis of brucellosis may cause the physician to overlook such common infections as tuberculosis, typhoid fever, subacute bacterial endocarditis, hidden malignant growths, rheumatic fever, otitic infections in children and less common conditions such as meningococcal septicemia. Perhaps the most useful procedure is to entertain the diagnosis of brucellosis in all cases of unexplained fever or prolonged disability, especially of the neuroasthenic type.

The behavior of the temperature shows the widest variations from sudden onset with high elevation to an insidious beginning, barely noticeable to the patient. Two of our twenty-two patients showed sudden onset with regularly recurring chills. In one instance the chills occurred every forty-eight hours and in the other every seventy-two hours. Perhaps the most characteristic thing about the fever is the constant irregular-

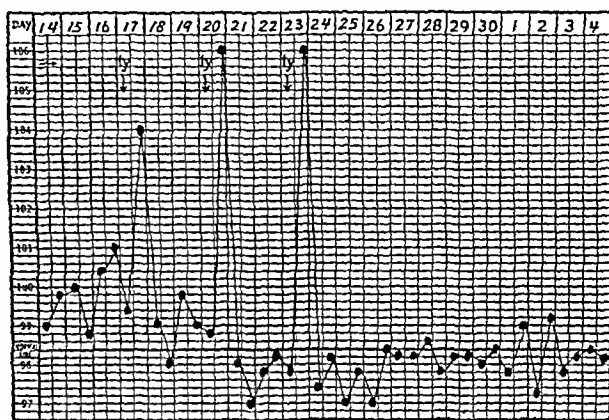


Fig 1 (case 1)—The high and the low temperature in twenty four hours before during and after treatment. Although fever had been present for seven months recovery was prompt and complete.

ity, so that it need not be confused with that of typhoid, empyema, tuberculosis or other common infections.

TREATMENT

One finds in reviewing the literature that most successful treatments are accompanied by a sharp thermal reaction. This is true regardless of whether the treatment given is administration of a vaccine, toxic filtrate, specific serum, chemical or foreign protein or fever induced by mechanical appliance.

Debono⁶ noted that after intravenous injection of filtrate prepared from brucellin and mehtine the temperature reached a maximum in seventeen or eighteen hours and then fell the following day. After two or three such treatments he was able to reduce the temperature to normal. In one of our cases a favorable drop in temperature occurred after the sharp thermal reaction induced by mercurochrome injected intravenously and sterilized skimmed milk injected intramuscularly. Prickman and Popp⁷ used the Simpson-Kettering Hypertherm to induce fever in three cases of brucellosis. The results, while somewhat delayed were generally satisfactory. Carpenter

² Huddleson I F, Johnson H W and Hamann E E. Study of the Opsonocytaphagic Power of the Blood and Allergic Skin Reaction in *Brucella* Infection and Immunity in Man. *Am J Pub Health* 23: 917-929 (Sept.) 1933.

³ Leishman W B. Studies on Phagocytosis. *Tr Path Soc. London* 56: 344, 1905.

⁴ Vetch R M. A Simple and Rapid Method of Estimation of the Phagocytic Power of Different Bloods. *J Path & Bact.* 12: 353, 1908.

⁵ Huddleson I F. *Brucella Infections in Man and Animals*. New York: Commonwealth Fund, 1936.

⁶ Debono J E. Treatment of Undulant Fever. *Lancet* 1: 374-375 (Feb. 16) 1935.

⁷ Prickman L E and Popp W C. Treatment of Brucellosis by Hyperpyrexia Induced by the Simpson-Kettering Hypertherm. *Proc Staff Meet. Mayo Clin* 11: 506-510 (Aug. 5) 1936.

and Boak,⁸ in a review of the treatment of human brucellosis, aptly remarked that the attribution of favorable results to a specific effect of the vaccine is not justifiable. In their opinion the good results depend on the intensity of the generalized systemic reaction evoked by the injection, the type of vaccine playing little part. These authors, further, added a word of caution regarding the possible toxic action of the vaccines. It must be noted, however, that numerous cures have been reported when no thermal reaction was induced by the medicament. One must not forget that spontaneous recovery often takes place. In this connection we quote from one of our colleagues with whom we had discussed fever therapy for a case of active brucellosis. She wrote "Our patient had such a complete remission (the temperature dropped from 104 F to normal, with complete subsidence of all symptoms) that we were not justified in using typhoid vaccine. If I had used the vaccine a week sooner we would have thought it a fine remedy." Had this correspondence occurred earlier, the patient would likely have been added to the list of those successfully treated by a certain method.

REPORT OF CASES

The following cases, in addition to the ten others already reported, represent our experience with the use

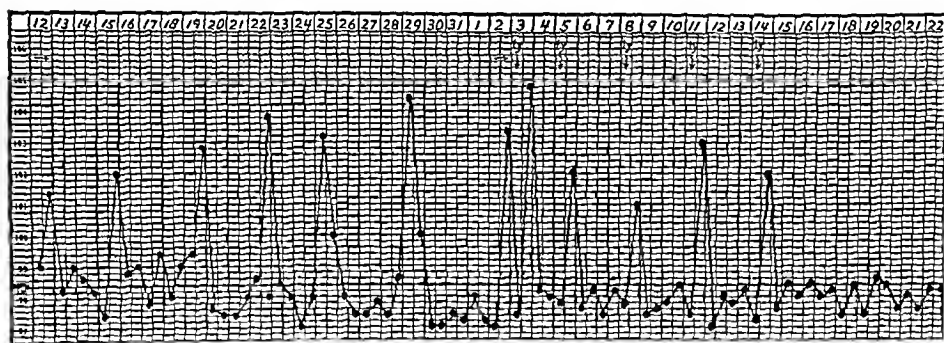


Fig 2 (case 2)—The high and the low temperature in twenty four hours before during and after treatment. Recovery was prompt and complete. This chart illustrates regularly recurring paroxysms of chills and fever.

of mixed typhoid vaccine⁹ injected intravenously.¹⁰ We include one control case, in which this agent was not used.

CASE 1—T V, a man aged 30, an undertaker admitted Sept 14 and discharged Sept 26, 1936, became ill seven months before admission with sudden fatigue followed by low grade fever and gastro intestinal distress, loss of appetite, furred tongue and chronic constipation, tenderness over the right upper quadrant, bloating and the loss of 31 pounds (14 Kg). Physical examination was not helpful beyond revealing evidence of the loss of weight. The temperature ranged from 100 to 101 F. Agglutination was negative, the intradermal reaction strongly positive. Treatment consisted of three injections of typhoid vaccine, 30 million organisms. The temperature (fig 1) remained normal after the third injection, and recovery was prompt and complete. The illness lasted thirty-two weeks; it terminated two weeks after treatment. At a follow-up examination May 9, 1937 agglutination was negative and the intradermal reaction moderately positive.

CASE 2—H F, a man aged 19, a garage mechanic, admitted July 12 and discharged Aug 21, 1936 became ill three weeks before admission with chills which occurred quite regularly

every two to four days, sweats, pain in the ribs and headache. Physical examination gave entirely negative results. He had four chills after admission, at seventy-two hour intervals. On July 13, the twenty-second day after the onset of illness, agglutination for *Brucella abortus* was negative, but nine days later it was found to be positive in a titer of 1:200. The leukocytes numbered 5,500 and the neutrophils 71 per cent. Treatment consisted of seven injections of typhoid vaccine in 50 to 80 million organisms. The temperature dropped to normal after the first injection, and the patient had no more chills (fig 2). He recovered completely and returned to work on the day after he was discharged from the hospital. The illness lasted five weeks. At a follow up examination May 9, 1937, the weight was 160 pounds (72 Kg), a gain of 41 pounds (13 Kg). Physically the patient was entirely normal. Agglutination was negative in all dilutions. The intradermal reaction was negative.

CASE 3—F L P, a man, aged 37, a minister, admitted Jan 8 and discharged Jan 25, 1937, had been ill twenty-six days. The onset was gradual with generalized pains in the body associated with chilly sensations and a temperature from 102 to 104 F. The patient was nauseated and vomited the first few days. He had a constant dull headache and several attacks of vertigo and fainted once. He had no pains in the joints but felt feverish and extremely weak. Physical examination was not helpful. A blood count showed hemoglobin 84 per cent, red blood cells 5,320,000, leukocytes 11,150, neutrophils 61 per cent, eosinophils none. Agglutination was

negative for *Brucella abortus*. The intradermal reaction was strongly positive, the temperature varied from 100 to 101.4 F for one week. The treatment consisted of two injections of 30 million typhoid organisms. The temperature was normal after the first injection. The patient returned to work February 17. The illness lasted eight weeks, four weeks after treatment. At a follow up examination May 13, agglutination and the intradermal reaction were negative.

CASE 4—G W L, a man, aged 45, a farmer, admitted June 14 and discharged June 19, 1936, readmitted Sept 18, 1936 and discharged October 14, became ill six months before admission, with grip. This was followed shortly by chill fever, sweats, headaches, backache, malaise and generalized stiffness of joints and loss of 11 pounds (5 Kg). Physical examination was not helpful. Agglutination for *Brucella abortus* was positive in a titer of 1:500. The temperature on admission was 99.4 F. It promptly returned to normal and we thought the patient was experiencing a natural remission so he was allowed to go home untreated. His fever returned and the other symptoms failed to clear up. After a second admission he was given seven injections of from 30 to 127 million typhoid organisms. Since he left the hospital his temperature has remained normal and he has been free from symptoms except for nervousness which is quite unusual to him. The illness lasted thirty-two weeks. At a follow up examination May 12, 1937 agglutination for *Brucella abortus* was positive in a titer of 1:500, the intradermal reaction was ++ and the weight was 154 pounds (70 Kg), a gain of 17 pounds (8 Kg). The patient said "I can't do a day's work, my legs give out." There was slight dyspnea on exertion. The results were only fair.

CASE 5—R W, a man, aged 18, a student admitted Sept 13 and discharged Sept 18, 1936 became ill August 1 with lethargy, loss of weight, lack of ambition, loss of appetite, frontal headache, pain in the legs, chills and a rise in temperature in the afternoon for one month. He had such night sweats one week that he frequently had to change

⁸ Carpenter, Charles M. and Boak, Ruth A. Treatment of Human Brucellosis. *Medicine* 15: 103-127 (Feb.) 1936.

⁹ F. H. Lilly & Co. No. 1166.
¹⁰ Ervin, C. F., Hunt, H. F. and Niles, John S., Jr. Foreign Protein Therapy. II. Treatment of Undulant Fever by the Intravenous Injection of Killed Typhoid and Paratyphoid B Bacteria. *Am. J. M. Sc.* 192: 34-41 (Aug.) 1936.

night clothes. Physical examination was not helpful. The leukocytes numbered 3600. The temperature varied from 99 to 103 F. Agglutination for *Brucella abortus* was positive in a titer of 1:500. The treatment consisted of an injection of 40 million typhoid organisms September 17 and two similar injections after the patient returned home. The temperature was normal after September 20. The patient was ill twenty-seven days before treatment was begun and had an immediate recovery. May 12, 1937, he was in perfect health and physical

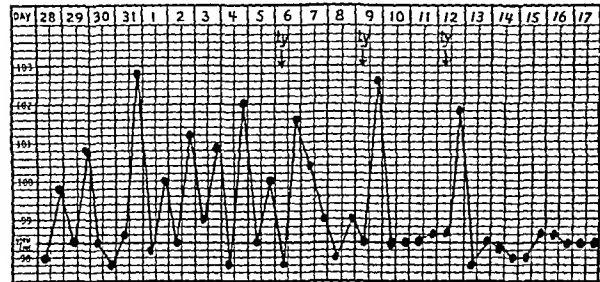


Fig. 3 (case 9)—The high and the low temperature in twenty-four hours. The temperature returned to normal after the second injection. Recovery was prompt and complete.

examination gave entirely negative results. He had gained 30 pounds (13 Kg). Agglutination was positive in a titer of 1:500. The intradermal reaction was moderately positive.

CASE 6—H. B., a man, aged 43, an undertaker, admitted April 23 and discharged May 21, 1937, had been ill four months with weakness and nervousness which rendered him almost unable to carry out his work, chills and sweats, continuous pains in the joints but no swelling, pain in the region of the right sciatic nerve and weakness in the right sacro-iliac joint. He said 'I am sore all over my flesh is like a raw piece of meat'. Examination showed that he was apprehensive and fairly well nourished with chronic tonsillitis, periapical dental infection and tenderness over the right sacro-iliac joint. The temperature ranged from normal to 101.2 F. Agglutination for *Brucella abortus* was positive in a titer of 1:160. Treatment consisted of four injections of typhoid vaccine, from 60 to 160 million typhoid organisms and tonsillectomy. With the exception of nervousness unnatural to him the symptoms completely disappeared in sixty days. May 12 agglutination was negative and the intradermal reaction strongly positive. The patient was still nervous.

CASE 7—S. M., a nun, aged 27, admitted July 3 and discharged Aug. 31, 1936 had been ill six months. The illness began with nervousness, occasional night sweats and frequent excessive perspiration during the day, constant pain in the region of the right sciatic nerve and loss of 12 pounds (5 Kg). At physical examination she was practically afebrile and had slight nasal and pharyngeal congestion and tenderness over the right sciatic nerve. Agglutination for *Brucella abortus* was positive in all dilutions. Treatment consisted of one month of rest in bed and six intravenous injections of typhoid vaccine from 30 to 90 million organisms. The results were not immediately helpful and the benefits from treatment are doubtful although all symptoms disappeared during the following ninety days.

CASE 8—S. L., a woman aged 34, a school teacher (patient of Dr. Ralph W. Thunman, Schaefferstown, Pa.) in September 1936 began to have sleeplessness, irritability, nervousness, especially in the morning and fatigue. She was tired on arising in the morning and found it hard to do any work. Gradually her appetite disappeared and she lost 27 pounds (12 Kg) and had a low grade fever. She was seen first Nov. 16, 1936. Physical examination was not helpful except to provide evidence of the loss in weight. Laboratory examination showed red blood cells 3,800,000 and leukocytes 7,750. The temperature ranged from 99 to 100 F. Agglutination for *Brucella abortus* was positive in a titer of 1:80. The patient was hospitalized Jan. 4, 1937 and given 10 million mixed typhoid organisms intravenously. The injection was repeated

January 9, and the temperature dropped to normal, it remained so for one month and then varied from 99 to 103 F the fever being accompanied by chills. February 9 the patient was given 30 million typhoid organisms intravenously and five days later a dose of 50 million. The temperature promptly returned to normal. May 14, 1937, the patient had not gained weight but was relieved and was improving so far as the symptoms of undulant fever were concerned.

CASE 9—W. R., a man, aged 23, a grocery clerk, admitted Aug. 28 and discharged Sept. 1, 1936, became ill three weeks before admission with a tired feeling in the legs and a rise of temperature in the afternoon to from 101 to 102 F. Physical examination was not helpful. Agglutination for *Brucella abortus* was positive in a titer of 1:500. Treatment consisted of three injections of from 30 to 40 million typhoid organisms. The temperature remained normal after the first treatment (fig. 3). Convalescence was complete, and the patient has since been symptom free. He returned to work Oct. 1, 1936. At a follow-up examination, agglutination was positive in a titer of 1:500 and the intradermal reaction positive.

CASE 10—I. L. F., a man, aged 45, a veterinarian, admitted May 11 and discharged May 26, 1936, had typical undulant fever in 1929 with strongly positive agglutination. In that attack he had pain in the shoulders, vague abdominal distress, headache and 'giant urticaria'. He contracted the disease while caring for herds infected with Bang's disease. He had a fever for nearly a year and never recovered his health. On admission, seven years after onset, he still complained of pain in his shoulders and intercostal areas. In fact, he had been unable to carry on his business. He complained of annoying paresthesia, especially in the right elbow and the right thigh. It was not deemed advisable to give him typhoid vaccine on account of the duration of his illness.

COMMENT

It will be noted that the course of acute and subacute *Brucella* infection was apparently shortened by this method of fever therapy.

It is of interest that in our small series of twenty-two patients one finds three invalids, all with chronic infection of from one to seven years' standing (cases 11 and 12 of a former report and case 10 of this report). The second patient, a woman 51 years of age, was given treatment in August 1935 and did well in spite of her age and her illness of nearly one year until February 1937, when definite psychasthenia developed, which has incapacitated her as a housewife. Patient 10 of this series is an example of an untreated person now a sufferer from a neurasthenic condition, a common complication, as pointed out by several authors. Such complications should cause no surprise when one recalls the frequency of definite involvements of the central



Fig. 4 (case 4)—A positive reaction ten days after an intradermal injection of 0.1 cc of a 1:10 dilution of undulant fever vaccine.

nervous system in undulant fever. They include meningitis, encephalitis and various forms of neuritis.

The mechanism of recovery is still a speculation, as pointed out in previous communications.¹¹ We reported that from the hemocytologic standpoint the most significant changes which occurred after the intravenous injections of killed typhoid and paratyphoid bacilli were found in the total leukocyte, the neutrophil, the metamyelocyte and the lymphocyte count. These observations were made by obtaining a control count immediately before the injection of killed organisms. After the injection of the killed typhoid and paratyphoid bacilli complete blood counts were made at hourly intervals for a period of four hours, twenty-four hours after the injection was made another complete blood count was taken. With a few exceptions the blood counts were made by the same person and the differential counts in all instances were checked by one of us.

In the series of cases reported in this article a similar study was made of each patient's blood, and in every instance after the injection of the killed organism relative leukopenia occurred in the first hour followed by a return to the preinjection level after twenty-four hours. The response of the neutrophils closely paralleled the response of the total leukocytes. The metamyelocytes showed no initial increase but a steady increase during the first four hours.

The lymphocytes showed an increase in the first hour and a decrease in the following three hours. The post-injection twenty-four hour count revealed that the lymphocytes were near the preinjection level. All the hemocytologic changes were transient as evidenced by the fact that at the end of twenty-four hours the observations were practically identical with the preinjection observations.

While the observations reported in this study do not explain why the patients recovered we do feel that as they were infected with a specific organism the results obtained strengthen the theory that the injection of killed typhoid and paratyphoid bacilli stimulates a general nonspecific immunogenic reaction. This reaction is reflected in the altered blood picture, which indicates a response of the reticulo-endothelial system to the foreign proteins injected.

Such response may in turn be the fundamental reaction which is responsible for the production of resistance or immunity. While we do not know exactly where antibodies are formed our results suggest that the injection of killed typhoid and paratyphoid organisms is responsible for the production in the body of nonspecific antibodies of sufficient quality to enable the patient to overcome the disease. Of course one cannot discuss immunity without considering the role of the phagocytes in ridding the body of bacteria.

We do not maintain that injection of typhoid vaccine is the ideal treatment but we do feel that it is the most practical method available to the rank and file of physicians who find here and there a case of brucellosis. It saves the necessity of trying to locate the specific vaccine or serum and more cumbersome methods of inducing fever. We have no hesitancy in advancing this form of treatment in view of the fact that whatever the method used the benefit seems to depend on thermal reaction. Its contraindications, namely, advanced

arteriosclerosis, arteriosclerotic or rheumatic heart disease, and marked debility, are common to other forms of therapy.

CONCLUSIONS

1 The results in the treatment of acute and of acute undulant fever by the intravenous injection of killed typhoid and paratyphoid organisms in carefully measured and appropriate doses compares favorably with those of any other form of treatment.

2 Contraindications to its use are arteriosclerosis, arteriosclerotic and rheumatic heart disease, hypertension and marked debility. These conditions also contraindicate most other forms of treatment.

3 We agree with Carpenter and others that the benefit comes chiefly from fever, but the stimulation of antibodies may also be important.

4 The advantage is the low cost and the immediate availability to any physician anywhere.

ABSTRACT OF DISCUSSION

DR. WALTER M. SIMPSON, Dayton, Ohio: Soon after our studies in undulant fever were begun in 1928, we experimented with the therapeutic use of a *Brucella melitensis* abortus vaccine. We pointed out that the vaccine was effective only in patients who responded with at least three or four sharp febrile reactions which usually occurred after the dosage of the vaccine had reached from 0.5 to 1 cc. In 1932 a woman missionary who had acquired undulant fever while resident in China was sent to us for treatment. A goat was the source of the fever. Vaccine therapy did not provoke the usual febrile response. She was then given two artificial fever treatments each of five hours' duration, at 105 F., rectal temperature. All evidence of undulant fever promptly disappeared. She returned to her work in China and has remained well since. It would appear that in all of these methods, including the foreign protein method just described, the production of fever artificially is the common denominator. Through correspondence with the collaborators in the experimental work in artificial fever therapy inaugurated by the Kettering Institute I have learned of more than a score of cases of undulant fever which have been treated with artificially induced fever with uniformly favorable results. One might ask how it happens in a disease characterized by sharp febrile reactions that artificial fever therapy would be effective. It would appear that the prolongation of the fever at a relatively high level stimulates immune reactions. It has been our practice to treat such patients at 105 F., rectal temperature for four or five hours at each session at intervals of two to three days. In most cases two or three treatment sessions will suffice. If the production of sustained artificial fever is the important factor in the treatment it seems logical to conclude that those methods which permit the production of fever under relatively safe and controlled conditions would be the methods of choice. The advent of simpler and safer methods for the controlled production of fever by mechanical means when administered by skilled, trained workers provides such a method. The injection of protein or chemical substances provokes less constant febrile responses and occasionally produces untoward reactions. Our present practice is to give a trial course of *Brucella melitensis* (abortus) vaccine therapy (N. N. R.). If it is ineffective we then utilize artificial fever therapy (Kettering-hyperthermia method). After we had reported 148 cases of undulant fever in and about Dayton, Ohio, in ordinance requiring the pasteurization of all milk and dairy products was passed. During the five years since the passage of that ordinance not one case of undulant fever has originated in Dayton, Ohio. In any consideration of the treatment of undulant fever the best treatment is still to prevent the disease by eliminating the sources of infection.

DR. CARL F. ERVIN, Danville, Pa.: Dr. Simpson's remarks are very helpful in this discussion. I agree with him that fever therapy induced by various mechanical means will probably help out in the treatment of a great many cases of undulant fever. Of course the thing I like best is the

11 Hunt H F, Ervin C F and Nide John S Jr Foreign Protein Therapy I Hematologic Changes following the Intravenous Injection of Killed Typhoid and Paratyphoid B Bacilli. *Am J Med Sci* 1939; 149: 100-106.

vaccine is that it is available to every doctor and he can use it himself. I feel sometimes that it is rather a stimulus to a doctor to feel that after all he can do something himself. The remark about prevention is certainly in order. In the city of Wilkes-Barre, Pa. for instance, I understand that there has not been a case of undulant fever as the result of rigid food inspection. It should be carried out in every rural district and city of the country.

DIAGNOSTIC METHODS IN UNDULANT FEVER (BRUCELLOSIS)

WITH RESULTS OF A SURVEY OF 8124 PERSONS

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The purposes of this paper are (a) to describe briefly the performance and interpretation of the laboratory methods which at present are believed to be most useful in the diagnosis of undulant fever (brucellosis) and (b) to report some of the results of a survey of the incidence of brucellosis in a large county hospital.

LABORATORY METHODS

The laboratory methods which are regarded as most useful are (1) the brucellergen intradermal test, (2) the

opsonic (opsonocytophagic) test (3) the rapid agglutination test and (4) culture (isolation) of *Brucella*.¹

1 The brucellergen test is performed by injecting 0.1 cc of a suspensoid of nucleoprotein (1:2,000) isolated from *Brucella* cells intradermally on the forearm and is read after forty-eight hours (fig 1).

2 The brucella opsonic test is performed by incubating a mixture of a live forty-eight hour culture of *Brucella abortus* and the patient's citrated blood in a water bath at 37 C for thirty minutes. The mixture consists of 0.1 cc of a saline sus-

cent citrate (5 cc of blood added to 0.2 cc of 20 per cent sodium citrate in saline solution). A smear of the mixture is then made on a glass slide, rapidly dried with an electric fan and treated with 0.5 cc of Hasting's stain for thirty seconds, after which 1 cc of distilled water having a pH of 6.4 is added for ten minutes. Twenty-five polymorphonuclear leukocytes are examined and their opsonic power classified according to the number of brucella organisms counted within each cell, as follows: negative, no phagocytized bacteria; slight, from 1 to 20; moderate, from 21 to 40; and marked over 40 (fig 2).

3 The rapid agglutination test is done on a glass plate that is ruled off into inch squares and rests on a dark field illumination box. In each of five squares the

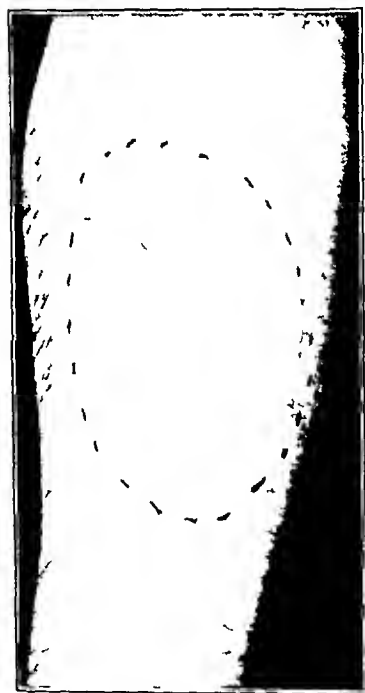


Fig 1—Positive brucellergen test. Note extensive areas of edema.

pension of organisms having a turbidity of 6 mm, as measured by the Gates apparatus, and 0.1 cc of the patient's citrated blood having a dilution of 0.8 per

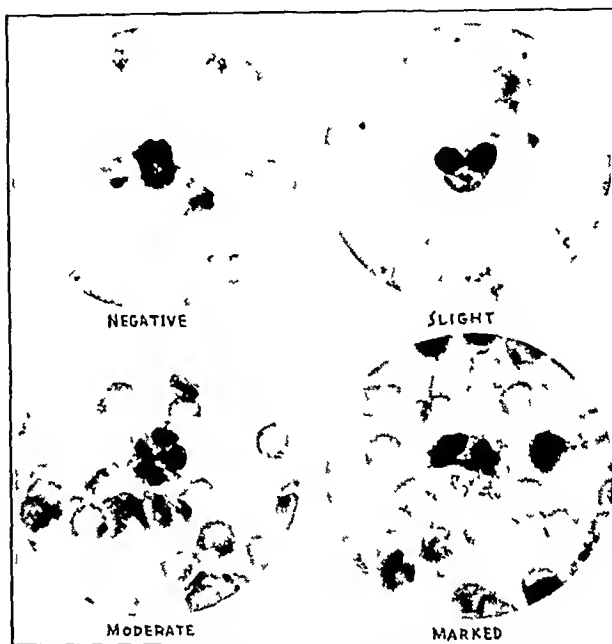


Fig 2—Brucella opsonic test showing polymorphonuclear leukocyte with negative slight moderate and marked phagocytosis of *Brucella* organisms.

following respective amounts of patient's serum are placed: 0.08 cc, 0.04 cc, 0.02 cc, 0.01 cc and 0.004 cc. A standardized dropper being used, 1 drop of rapid antigen is added to each amount of serum, to form respective serum concentrations of 1:25, 1:50, 1:100, 1:200 and 1:500. The contents of each of the five squares are then thoroughly mixed with a clean toothpick, the operator proceeding in reverse order from the 1:500 to the 1:25 serum concentration. The glass plate is removed from the box, tilted backward and forward slowly for about two minutes and then replaced on the box. The light is now turned on and the results read (fig 3).

4 Culture (isolation) of *Brucella* is done as follows: (a) In taking a blood culture, 10 cc of blood is added to 10 cc of sterile 4 per cent sodium citrate in saline solution and incubated at 37 C for twenty days in a jar in which 10 per cent of the air has been displaced by carbon dioxide (fig 4). The uncoagulated whole blood serves as a highly satisfactory medium for the isolation of *Brucella* while the final concentration of 2 per cent sodium citrate serves to retard the action of opsonins if they are present in the blood. At four day intervals the jar is opened and 0.5 cc of blood-citrate

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From the Departments of Pathology of Eloise Hospital, Eloise, and Wayne University College of Medicine, Detroit, and the Department of Bacteriology, Michigan State College, East Lansing.

1 Huddlestone, I. F. *Brucella Infections in Animals and Man*. New York: Commonwealth Fund, 1934. Heller, A. E., Pharris, C. R., and Grub, W. H. *Diagnosis of Undulant Fever*. J. A. M. A. 107: 1369 (Oct. 24) 1936.

mixture is removed and inoculated on a liver agar slant.² The freshly inoculated agar slant is also incubated in the 10 per cent carbon dioxide atmosphere. At each four day interval, all culture tubes are examined for growth (fig. 5).

(b) Specimens of urine, stool, bile, spinal fluid or other infective materials are prepared for culture according to standard methods. Such material is inoculated on plates of liver agar containing gentian violet in a concentration of 1:200,000. One half of the plates are incubated aerobically for ten days, the other half are placed in a container having a 10 per cent carbon dioxide atmosphere and incubated at 37 C for three days.

INTERPRETATION OF RESULTS

1 The brucellergin test is negative if erythema alone is present. A negative test will usually rule out

almost always show little or no phagocytosis. A subject reacting positively to the intradermal test is classified as infected when less than 40 per cent of his polymorphonuclear leukocytes show marked phagocytosis.

TABLE 2—Classification of Positive Brucellergin Reactions Based on Opsonic Tests

Infected Immune	Number	Percent
	229 84	5 100

and as infected but with questionable immunity if from 40 to 60 per cent of his polymorphonuclears show marked phagocytosis. A subject reacting to the intradermal test is classified as immune when 60 per cent

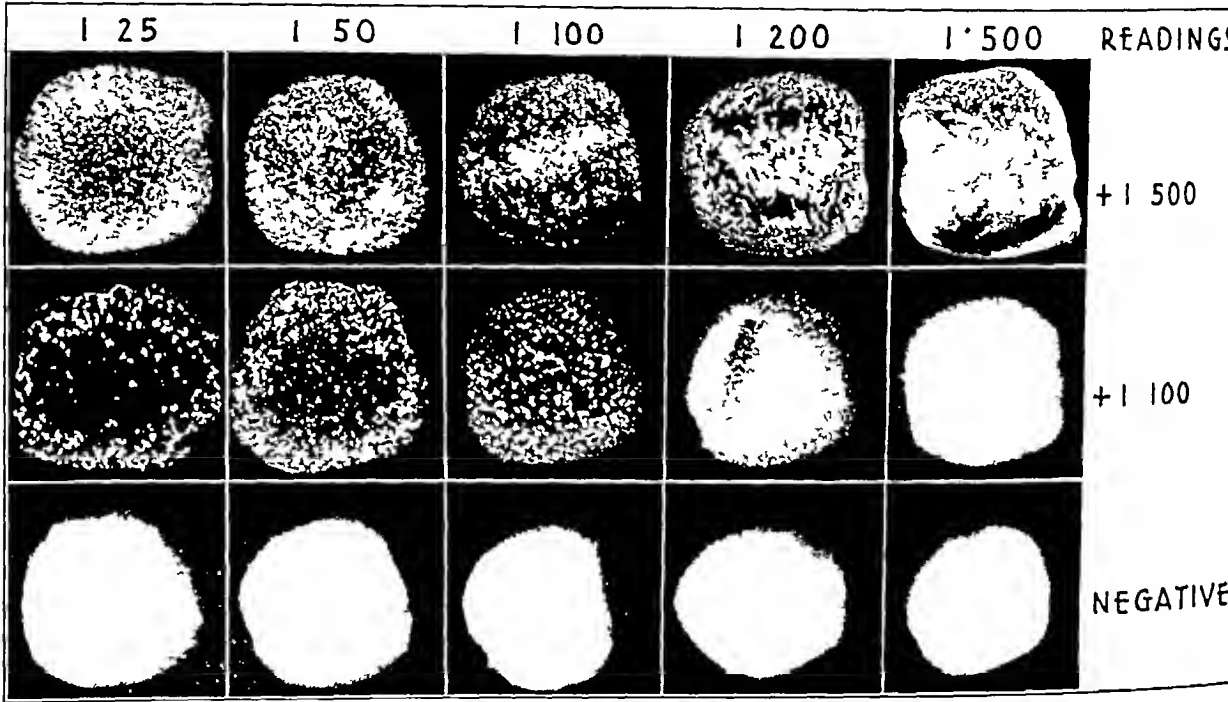


Fig. 3—Killed agglutination test. Note complete agglutination in serum dilutions of 1:500 and 1:100.

brucellosis. The brucellergin test is positive if in addition to an area of redness there is also edema or induration which measures from 0.5 to 7.5 cm or more in diameter. A positive test is specific for sensitization.

TABLE 1—Results of Brucellergin Intradermal Tests on Various Groups, Eloise Hospital, 1935-1936

Group	Number of Tests	Number Positive	Percentage Positive
Hospitalized patient	612	31	5.1
Indigent persons	369	29	7.9
Indigent food handler	49	9	18.4
Employees	—	10	100
Mental patient	4	0	0
All group	1024	845	82.5

to Brucella and is due to past or present infection. It does not, however, indicate the patient's immune status, which may then be determined by the opsonic test.

2 The brucellergin test is a nonphagocytic test in a subject reacting to the intradermal test will

or more of his polymorphonuclear leukocytes show marked phagocytosis of Brucella organisms.

3 A negative agglutination test does not rule out brucellosis. A positive agglutination test consists of complete agglutination in a titer of over 1:25.

4 A positive culture may be found for active infection or for carriers of the disease.

RESULTS OF SURVEY AT FLOISE HOSPITAL

An unusual opportunity to study the incidence of Brucella infection presented itself at Eloise Hospital and Infirmary, whose milk supply was partly infected with Brucella. This public institution of Wayne County (in which the city of Detroit is located) has three divisions: a general hospital (William J. Seymour Hospital), an infirmary for homeless indigents and a mental hospital. All persons in the institution were first tested intradermally with brucellergin.

Table 1 shows the number and percentage of positive reactions among the following groups: hospitalized patients, indigent persons, indigent food handler, employees and mental patients. Among 1024 persons tested, 845 or 82.5 per cent showed positive reactions.

(Continued on next page)

largin reactions The incidence roughly paralleled the average length of stay of the various groups in the institution The incidence was lowest among the hospitalized group (6.2 per cent), whose average stay was the shortest, and greatest among the mental patients (15.4 per cent) whose average stay was the longest

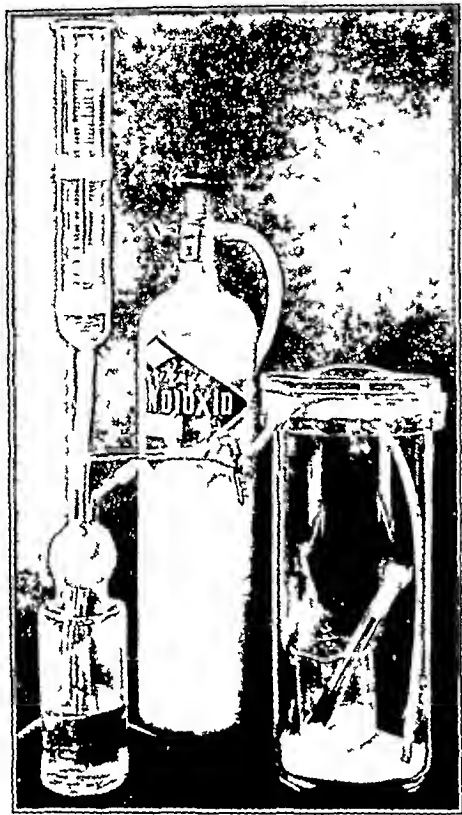


Fig. 4—Apparatus used to produce a 10 per cent carbon dioxide atmosphere for culture of *Brucella*

The 845 persons with positive brucellergin reactions were then classified by means of the *Brucella* opsonic test as infected or immune In 623, or 73.7 per cent the polymorphonuclear leukocytes showed absent slight

The positive brucellergin reactions were accurately measured in all cases and were classified into three groups, as follows those measuring from 0.5 to 2.5 cm in diameter, those measuring from 2.5 to 7.5 cm in diameter and those measuring over 7.5 cm in diameter The size of the intradermal reactions showed little or no relation to the status of *Brucella* infection or immunity (table 6) The percentage of reactions over 7.5 cm in diameter was only slightly greater among the immune persons (30.2 per cent) than among those infected (22 per cent)

TABLE 4—Comparison of Brucellergin and Agglutination Tests

Reaction	Brucellergin	Agglutination	Percentage Agreement
Negative	725	794	89.9
Positive	845	111	13.1

TABLE 5—Agglutination Titers in *Brucella* Infected and Immune Groups

Group	Number	0 to 1:25					Over 1:25	
		0 to 1:25	1:50	1:100	1:500		Number	Percentage
Infected	623	590	11	13	9		33	5.3
Immune	222	144	42	24	12		78	39.6
Positive brucellergin reaction	845	734	53	37	21		111	13.1

Cultures of the blood were made for all 845 individuals with positive brucellergin reaction and of the urine for 370 infected persons The *Brucella* organism was isolated from the blood in four instances of active infection *Brucella abortus* once and *Brucella suis* three times In addition *Brucella suis* was isolated from the urine of one carrier and from the urine and the

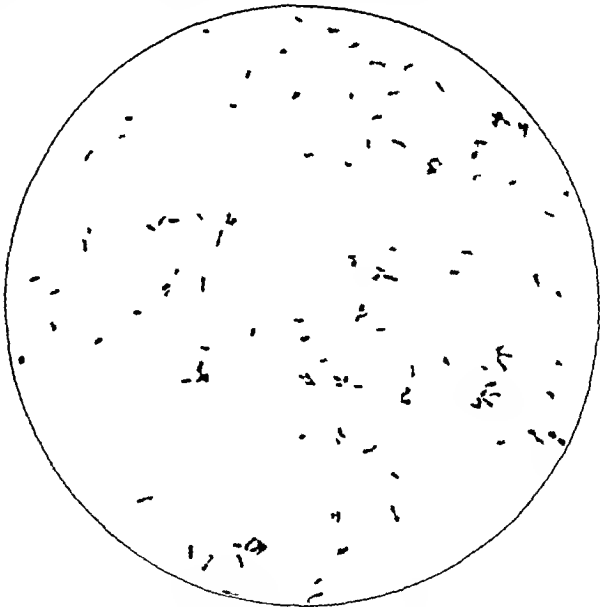


Fig. 5—*Brucella abortus* $\times 1800$

TABLE 3—Classification of Infected and Immune Persons According to Sex

	Intradermal Tests	Positive		Infected		Immune	
		Number	Percentage	Number	Percentage	Number	Percentage
Male	5401	525	9.1	422	7.3	106	1.8
Female	2323	317	13.6	201	8.6	116	5.0
Total	8124	845	10.3	623	7.7	222	2.7

or moderate phagocytosis of *Brucella* organisms, and the individuals were classified as infected The remaining 222, or 26.3 per cent showed marked opsonic power and were classified as immune (tables 2 and 3)

Seven hundred and twenty-five persons with negative brucellergin reactions were tested by means of the rapid agglutination method Only one showed a significant serum agglutination titer (over 1:25) Among 845 subjects with positive brucellergin tests 111, or 13.1 per cent, showed a significant serum agglutination titer (table 4) Of the 623 infected persons, thirty-three, or 5.3 per cent, gave a positive agglutination test Of the 222 immune persons, seventy-eight, or 39.6 per cent gave positive agglutination tests (table 5)

stool of a second carrier The *Brucella suis* infections were probably not contracted through the milk used in the institution

The brucellergin, opsonic and agglutination tests were repeated after five months on ninety-nine persons with negative tests, 103 infected persons and eighty-four immune persons The comparison of the *Brucella* status of the subjects in these groups after the five

months interval is shown in table 7. The size of the brucellergin reactions and the results of the opsonic and agglutination tests showed remarkably close similarity to those of the first tests.

The milk used in the institution was unpasteurized and was obtained partly from a milking herd of eight-five cows, nine of which were found to be eliminating

TABLE 6—Size of Brucellergin Intradermal Reactions in Brucella Infected and Immune Groups

Group	Number	0 to 2.5 Cm		2.5 to 7.5 Cm		Over 7.5 Cm	
		Number	Percentage	Number	Percentage	Number	Percentage
Infected	623	196	31.5	260	41.5	137	22.0
Immune	221	43	20.0	110	49.5	67	30.2
Total reactions	845	241	28.5	400	47.3	204	24.2

Brucella abortus in their milk and partly from five other herds whose milk was free from *Brucella abortus*. The incidence of infection among the various hospital groups as judged by the intradermal tests appeared to vary in proportion with the average length of stay in the institution. Table 4 shows clearly that the brucellergin reaction is much more sensitive than the agglutination test in the detection of *Brucella* infections and that the agglutination test is positive in only a small percentage of cases of infection. It would therefore seem that the agglutination test should be used as a confirmatory test rather than be relied on for diagnosis. While a positive agglutination test is of definite value, a negative agglutination test cannot be considered to rule out the presence of brucellosis.

The results of the check of the various tests after five months among the groups of negative reactors, infected subjects and immune persons showed remarkable correspondence for most of the methods. Of the ninety-nine negative reactors, forty-six males and fifty-three females, nine females had a positive reaction and five were classified as infected and four as immune. None of the males were infected. This was taken to mean that the new infections were being produced by infected milk or more likely by means of carriers among the women.

SUMMARY

1. The brucellergin test is the most sensitive test in the diagnosis of brucellosis. If the test is negative, brucellosis will usually be ruled out.

TABLE 7—Results of Brucellergin and Opsonic Tests on Vegetative Reactors and Infected and Immune Persons After Five Months

Original Classification	Number	Classification Five Months Later		
		Negative	Infected	Immune
Negative	99	0		4
Infected	10		6	3
Immune	4	0	4	60

2. If the opsonic and the opsonic test should then be performed to determine whether infection or immunity is present.

3. A negative brucellergin test does not rule out *Brucella* infection. The agglutination test is diagnostic only in a few cases and gives no information as to the status of the subject.

4. The results of the various tests after five months in the

ABSTRACT OF DISCUSSION

DR I. FOREST HUDDLESON, East Lansing, Mich., in hearing the results of the survey at the Eloise Hospital presented by Dr. Gould, the question arises as to what were justified in classifying such a large number of individuals showing positive allergic reactions as infected. The classification is based on published and unpublished data which have been obtained in cases of undulant fever that yielded positive cultures from the blood, stools or urine. We shall continue to adhere to this classification until some one following the technique shows that the classification is erroneous. The usefulness of this system of tests will depend on how they are performed and interpreted. In the case of the intradermal test with brucellergin, the time interval of reading the test is important. If the result of the test is read under forty-eight hours, it is likely to be misinterpreted as about 50 per cent of the allergic individuals show an intense erythematous reaction at the twenty-fourth hour. Such a reaction may be mistaken for a specific one. The accuracy of the results of the phagocytic test will depend on the adherence to the prescribed technique. The selection of the proper culture for the test is highly important. Certain strains are phagocytized by cells in normal blood as well as in immune blood. The type of reagents and concentration of the reagents used in making the test should be selected very carefully. We do not wish to take the position that the phagocytic test or allergic test cannot be improved. Before one attempts to change the system of tests for diagnosis of undulant fever, it is hoped that a large number of comparative tests will be made before the present system is discarded.

PULMONARY ASBESTOSIS

IV. THE ASBESTOS BODY AND SIMILAR OBJECTS IN THE LUNG

KENNETH M. LYNCH, M.D.
CHARLESTON, S. C.

One of the conspicuous and interesting features of the pulmonary condition resulting from the inhalation of asbestos dust by miners and mill workers in this material is the occurrence of certain curious bodies in the lungs and peribronchial lymph nodes and frequently in the sputum.

These objects have been sufficiently described,¹ but it is relevant here to review briefly their characteristics. They measure from about 10 to more than 100 microns in length and from about 1 to 12 microns in thickness and are composed of a central translucent fiber or needle crystal, the asbestos crystal, with an enveloping shiny golden or brownish substance constituting various architectural figures. The whole object may be a rod with smooth blunt ends or, more often, with one or both extremities in a single rounded knob or a clump of such knobs, reminding one of the fruit body of *Aspergillus*. Frequently the shaft is a series of rounded beads or disks strung closely along the central filament. Again the object may be of the shape of a club, often with one knobbed end or it may be a long slender filament. Spherical forms of various sizes are also seen. Characteristically these bodies give a prussian blue reaction for iron.

McDonald² advanced the hypothesis that the asbestos body is a particle of asbestos fiber in the process of alteration and absorption by hydrolysis with the silicate passing into a colloidal state and a gel.

From the Department of Pathology, Medical College of the South Carolina.

Read before the Section on Pathology and Physiology at the Eighth Annual Session of the American Medical Association, City of New York, June 11, 1937.

¹ McDonald, Stuart. Histology of Pulmonary Asbestos Bodies in Sputum and Lung. J. A. M. A. 107: 159 (A) (1937).

IN THE LUNGS

These bodies may be found in the lungs of asbestos workers, within the bronchioles, the alveoli near about and the interlobular, peribronchial and subpleural tissues along the lymphatic route. They occur also in peribronchial lymph nodes, within sinus walls and

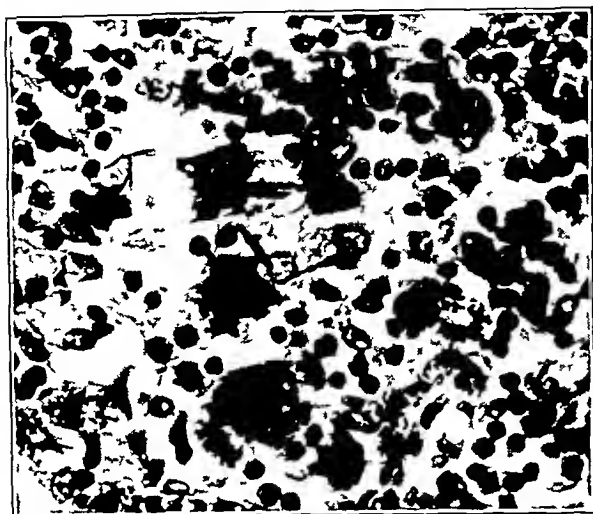


Fig 1—Asbestos bodies in peribronchial lymph node reduced from a photomicrograph with a magnification of 1000 diameters

embedded in fibrosed areas. Here they are usually of the shorter lengths, although some may be surprisingly long considering their route of collection through small lymphatic channels. I have seen them within veins in the lungs, where they may have been dragged in the course of sectioning the tissue, and at least one typical form was found embedded in the splenic pulp. Stewart, Bucher and Coleman² have reported finding them also in the spleen.

Characteristically they are limited to the bronchial tract, the adjacent pulmonary alveoli, the peribronchial connective tissues and the peribronchial lymph nodes.

EFFECTS

In the alveoli they are usually associated with or enclosed by phagocytes, mononuclear or multinuclear, some large foreign body giant cells occurring massed about those of large size. This may be the only cellular reaction to their presence. The following case illustrates this fact.

CASE 1—A Negro, aged 35, whose death was due to arterio sclerosis and pontine hemorrhage, had worked in the carding room of an asbestos factory for a total of five years during an elapsed period of seven years, beginning fifteen years before his death. During his exposure there was no adequate system of dust disposal in this plant, in fact, it was before the recognition of a potential hazard in the industry and the institution of measures of protection of the workers from the dust.

In spite of an undoubtedly heavy exposure and the length of time during which the bodies remained in the lungs, and although they had become deposited within the interlobular tissue around bronchioles there was no definite fibrosis or other reaction to them only phagocytosis of those remaining in alveoli. The lung generally was normal on gross and histologic examination except for an old puckered scar of the left apex.

It appears therefore, that the presence of this material in abundance and over a long period does

not necessarily result in fibrosis or other apparent damage to the tissue. That is to say, the anatomic disease asbestosis may not be assumed to exist simply because of quantity exposure of such a duration, an assumption apt to be the case under current conception.

Often, however, the asbestos bodies not only incite phagocytosis while within bronchioles and particularly alveoli but enter the tissues and apparently the lymphatics and lodge along the course, tending to stimulate growth of fibrous tissue about them. Thus fibrosis of the course of lymphatic circulation in the lungs and peribronchial lymph nodes is the resulting disease. It is generally accepted by students of the condition that the disease is a diffuse type of fibrosis rather than the nodular form of silicosis proper. Lynch and Smith³ have already reported, however, on the occurrence of nodular fibrosis from asbestos inhalation, and I expect to consider this matter again in a separate report.

IN THE SPUTUM

In addition to the conspicuous presence of asbestos bodies in the area of the lung at autopsy, they may be found in the sputum of asbestos workers, by direct microscopic examination of the wet preparation when in numbers or in the sediment of a strongly alkaline solution of sodium hypochlorite or 10 per cent sodium hydrate-digested sputum, even when few.

According to my experience, the presence of these objects in the sputum indicates only inhalation of asbestos dust of sufficient duration for them to be formed. It is apparently possible to find them under conditions probably not conducive to disease. On the other hand, they may not be found even when the lungs are extremely disabled by fibrosis and the bodies are within the bronchioles and alveoli in large numbers.

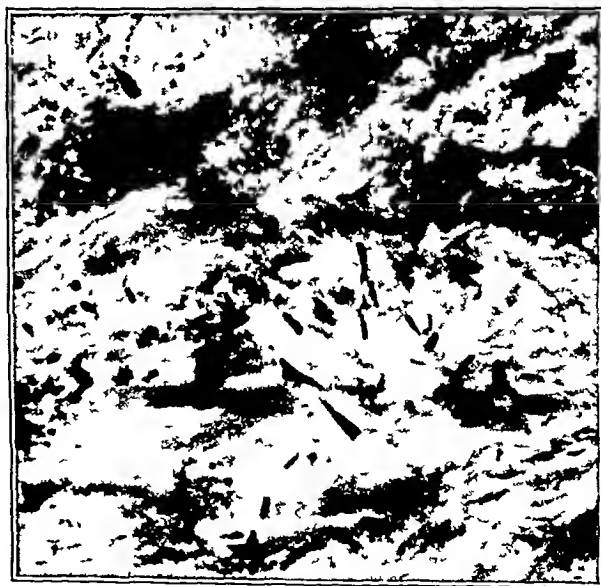


Fig 2—Deteriorating asbestos bodies in a case of asbesto-silicosis reduced from a photomicrograph with a magnification of 1000 diameters

I have found them in the sputum of an engine room worker at an asbestos plant whose exposure to the dust was not material and who exhibited no evidence of pulmonary abnormality. On the other hand, in three

² Stewart H. L., Bucher C. J. and Coleman E. H. Asbestos Report of Two Cases. Arch. Path. 12: 909 (Dec.) 1931.

³ Lynch H. M. and Smith W. A. Pulmonary Asbestosis. II. Including the Report of a Pure Case. Am. Rev. Tuberc. 23: 643 (June) 1931. Pulmonary Asbestosis. III. Carcinoma of Lung in Asbesto-Silicosis. Am. J. Cancer 24: 56 (May) 1935.

cases of long standing extreme fibrosis of the lung, in which many bodies were observed in the lung at autopsy, they failed to appear in examinations by the concentration method of a number of specimens of sputum. Apparently in the fixed state of the lung, with dilatation of bronchioles and alveoli, in extreme fibrosis, these bodies may not be expelled to the exterior.

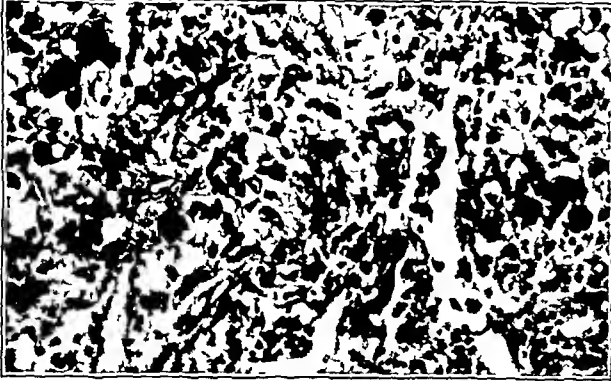


Fig 3 (case 4)—Asbestos like bodies in lung of cotton compress worker reduced from a photomicrograph with a magnification of 860 diameters

Their presence in numbers in sputum indicates material exposure at a comparatively recent time but without sufficient disability to interfere with the normal course of expulsion of dusts. It does not indicate a grade of asbestosis proportionate to the numbers of the bodies. That is to say, their absence from the sputum of asbestos workers may be consistent with advanced asbestosis, while their presence does not necessarily mean actual pulmonary damage.

ALTERATION

How long these bodies may remain intact and of characteristic form and color within phagocytes and

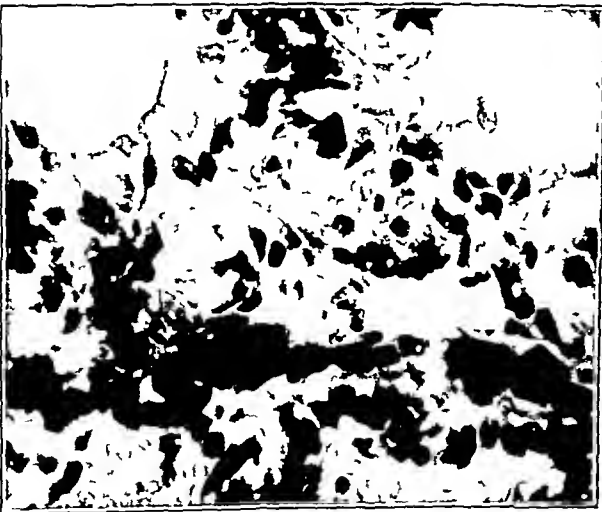


Fig 4—Asbestos like bodies in lung, reduced from a photomicrograph with a magnification of 860 diameters

within living cellular tissues is unknown. Their tenure of residence is long and may be looked on as practically permanent from their preservation after many years. However it appears that they may undergo the changes of dissolution and may possibly disappear. In fact the beaded forms are looked on by some authorities as weathered forms.

Besides such changes which may indicate deterioration, there occur in old deposits bodies of similar form usually of the smaller clubbed types but not of the characteristic golden or brown color. Instead they take the hematoxylin in routine hematoxylin and eosin staining of microscopic sections. I have seen these forms in fair numbers within old hyaline fibrous areas in association with typical brown bodies in surrounding tissues. These bodies must have been in situ for a long time. Further, I have encountered like hematoxylin-staining bodies within old caseous areas of tuberculosis associated with asbestosis. I take these bodies on the basis of their morphology to be altered asbestos bodies, not only changed in substance but also decreased in size. As to the question of their distribution, in the depths of some old fibrous areas and within some old necrotic associated tuberculosis lesions I have failed to find any, although to judge by their numbers in similar locations elsewhere they must have been present at some time.

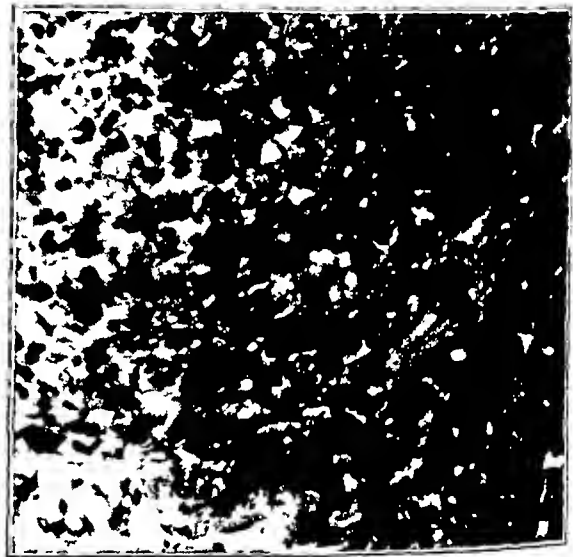


Fig 5—Asbestos like bodies in lung in dust deposit in a patient with heart failure reduced from a photomicrograph with a magnification of 400 diameters

OTHER DUST BODIES

After the discovery of the asbestos body the presence of such brownish objects within the lung came to signify practically a previous exposure to asbestos dust. This idea has been altered by the finding of similar bodies when no such exposure had occurred. Tylecote and Dunn,⁴ Cooke⁵ and others have called attention to the occurrence of dust particles with brown coating in the lungs of workers in coal.

I have observed a considerable number of autopsies following death from a variety of diseases, in which the lungs contained brown bodies to be compared to asbestos bodies. The following cases are illustrative.

CASE 2—A Negro, aged 32, who had been a coal miner most of his working life and had not worked with asbestos at any time, died of chronic pulmonary tuberculosis. In his lungs, besides large deposits of granular and splinter material in fibrosed areas about lobular vessels and within giant phagocytes in certain alveoli, many brown bodies not unlike the smaller forms of asbestos.

⁴ Tylecote F F and Dunn J S. Case of Vascular Disease in the Lungs of a Coal Miner Who Had Never Worked with Asbestos. *Lancet* 2, 632 (Sept 19) 1931.
⁵ Cooke W E. Silico-Anthraxosis. *Internat. J. Tuberc. Dis.* 1, 1, 1 (April 1) 1933.

bodies were observed. These were single spherical forms globular and disk shaped forms in rows or chains and club shaped bodies and rods, some with one or both ends knobbed. Often the centrum could be made out as a black granule or, in the larger bodies, a black splinter, but the brown coating was like that of the asbestos body.

CASE 3—A Negro housemaid who had never worked in asbestos died of malignant myoma of the uterus. Her lungs

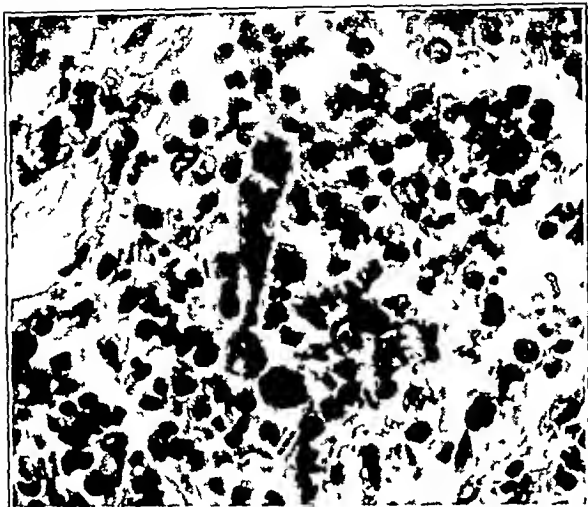


Fig 6—Asbestos like bodies in lung reduced from a photomicrograph with a magnification of 860 diameters

contained a black amorphous material similar to that in the lungs of the coal shute worker, although less in quantity and numerous brown bodies of like kind and of similar distribution associated with a state of emphysema and chronic bronchitis but with no definite related fibrosis.

CASE 4—A Negro, aged 45, who had worked virtually all his working life (20 years or more) in a cotton compress and not at all in asbestos, died of arteriosclerosis and pontine hemorrhage. His lungs contained large numbers of golden brown bodies, some closely resembling asbestos bodies. They were of the smaller sizes and of various shapes, as in the previous cases cited, and were accompanied by black dust. They did not show the black centrum but rather a central body of translucent appearance, fiber-like. In the alveoli there were large numbers of mononuclear phagocytes containing fine dust but no brown bodies. No material fibrosis was associated with the deposits.

Similar brown bodies have been observed in the lungs of a considerable number of subjects who died of heart failure, particularly rheumatism (fig 5) and arteriosclerosis (fig 6).

Generally the number of bodies found was small, but in some instances they were quite conspicuous. In fact, in some cases a diagnosis of asbestosis was made on routine examination and stood until investigation satisfactorily showed no such occupational exposure.

It has come definitely to my mind that chronic congestion of the lungs may play a part in the formation of some of these bodies, at least that congestion may augment or favor the formation of the enveloping substance. In this connection, a close study of the brown iron-bearing granules in the mononuclear cells in alveoli in cases of congestive heart failure (heart failure cells) will disclose that many of them contain a black granule centrum.

The bodies here described have generally been more conspicuous in cases of rheumatic heart disease. They have always been associated with black particulate matter and except in the case of the cotton compress

worker a black centrum could be seen. Only the small round forms occurred commonly in phagocytes in alveoli. The larger forms, rods, clubs and chains, were found mainly within the tissues of the interlobular framework. They gave the prussian blue reaction for iron, as does the asbestos body. Their iron content and their seeming common connection with pulmonary congestion and the local liberation of blood iron again raises the question as to whether the iron of the asbestos body may not be so related, at least in part and whether congestion may at least favor the production of all such bodies.

In connection with this question it may be recalled that the asbestos body does not always form when asbestos dust comes to lie in the lungs or in other tissue even for periods usually sufficient to produce it. Schuster⁶ reported on the occurrence of asbestosis in a dog, in which only naked asbestos fiber was found, with no brown envelop produced, while Gardner and Cummings⁷ found that the asbestos fiber remained uncoated in experimental asbestosis of the rabbit.

Usually, I am confident, such deposits in the lungs may be distinguished from asbestos bodies, particularly because of the larger sizes and the translucent needle centrum of the latter, but the form is often similar and the formation of the brown smooth coating must be by the same or a similar process.

SILICA BODIES

The state of the dust particles to be found in cases of silicosis proper seems to warrant special consideration in a study of the deposits associated with dust disease. In my series silicosis is scant and therefore my observation not extensive. However, in this small amount of material, including a case of advanced typical nodular fibrosis attending extreme accumulation of dust in the lung with much deposit of hemosiderin,

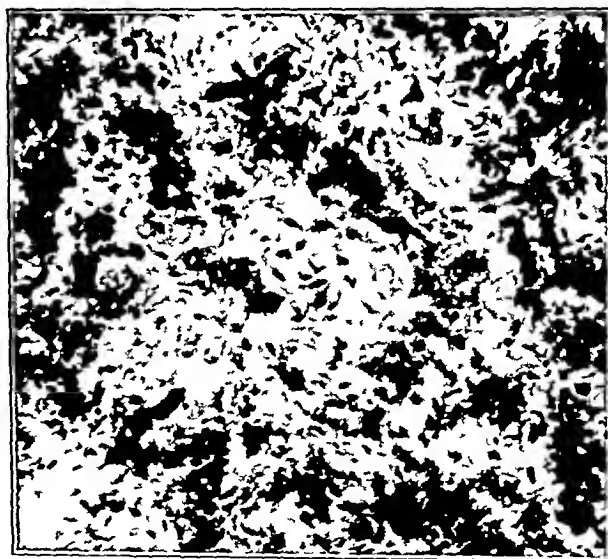


Fig 7—Silica bodies resembling asbestos bodies reduced from a photomicrograph with a magnification of 375 diameters

the formation of an enveloping substance about the dust particles similar in color and appearance to that about asbestos and the other particulate matter here discussed was striking.

6 Schuster N H Pulmonary Asbestosis in a Dog *J Path & Bact* 34 751 (Nov) 1931
7 Gardner L U and Cummings D E Studies on Experimental Pneumonokoniosis VI Inhalation of Asbestos Dust Its Effect upon Primary Tuberculous Infection *J Indust Hyg* 13 65 (Feb) 1931

This formation is encountered wherever the dust is found in alveoli, associated particularly with hemosiderin granules and occurring in mononuclear phagocytes, in the interlobular tissues and in the hyaline fibrous nodules. The form of the body is dependent on the size and the shape of the dust particle of course, and none of the large bodies occurring in asbestosis are to be seen. However, the small forms seen in asbestosis are well simulated. The enveloping substance is shiny, usually less noticeable than that of the asbestos body and a lighter golden as a rule but sometimes a comparable brown.

The most common body is rounded, sometimes truly spherical, with a pale golden envelop on a black granule. When the dust particle is elongated the whole body is shaped like a rod, club or needle. Some bodies are rough and irregular, when the centrum of the dust particle is irregular, rhomboidal or chipped, but the surface of the envelop is always smooth.

The formation of these silica bodies in true silicosis seems to be just as much a part of the process concerned as in the probably related state of asbestosis.

It appears possible that other fiber or crystalline dusts not yet particularly studied may produce similar bodies and also that confusion of some consequence may result from failure to realize that asbestos bodies may be simulated by other deposits in the lung.

As to the nature of all of these objects, it appears that they are formed on a silica base, as is the asbestos body. On that hypothesis the group would become silica bodies, of which the asbestos body is a member.

16 Lucas Street

ABSTRACT OF DISCUSSION

DR. HENRY C. SWEANY, Chicago. The asbestos fiber is from 100 to 200 microns in length on an average with occasional shorter pieces. Owing to its length it has great difficulty in following the lymphatic channels. It is usually stopped in the smaller bronchioles and from there works its way through the bronchial wall and but rarely proceeds much farther. Therefore there is not the tendency to enlargement of the hilar lymph nodes seen in silicosis. The fibrosis has a tendency to be more of a linear and stringy type and does not tend to form into the regular ball of twine whorls seen in silicosis. One of the similarities between silicosis and asbestosis is the individual difference that Dr. Lynch has mentioned between one patient and another. The disease may develop in one person much more readily than in another yet some may be exposed for a long number of years without showing much detriment. It is a most important and timely observation relative to the presence or absence of these asbestos bodies. He has pointed out wisely that sometimes they may be present when the patient has no asbestosis and that they may be absent with an asbestosis. It isn't so simple as to take a little sputum, make a smear and find these golden yellow bodies. It is really quite difficult to establish a definite diagnosis of the disease. I should like to ask Dr. Lynch whether he has made any observations on the character of this yellow pigment. The latest reports that I have read on the subject by Gardner, Glove, Burger and Merewether say that the presence of the golden yellow pigment is thought to be due more than anything else to the presence of iron in the fibers. Asbestos is an alkali magnesium silicate with some calcium and some iron in various proportions but the presence of iron seems necessary in order to give the golden color. The disintegration process that goes on causes the fibers to assume the various club shapes and ultimately they are entirely resorbed and disappear as Dr. Lynch has shown. I believe that silicosis in which there is pure silicon dioxide is different. I don't recall having seen any of these golden yellow bodies in silicosis and I have examined a large number of specimens. I believe that the iron or some other substance in the asbestos fiber is more responsible for the color and therefore one should not expect to find it in silicosis. It

is pertinent that these old chronic cases with passive congestion and accumulation of iron may also show golden yellow bodies, as I have seen them in other diseases.

DR. KENNETH M. LYNCH, Charleston, S. C. In reference to the occurrence of objects in the spleen which may be taken for these bodies, they have been reported in that location. I have seen there in a few cases objects that I would call asbestos bodies, but I really did not know whether they might be other bodies coated with iron in the congested state of the spleen. I presume that the iron has something to do with the formation of this smooth brown coat about the asbestos fiber in the lung. However, it doesn't always form. In the lungs of a rabbit in experimental asbestosis, Gardner observed that the asbestos fiber remained naked and did not become coated with this brown material. Shuster has reported that in asbestosis in a dog the fiber was naked, without any coating. So far as I know, the material is considered a colloid developed from decomposition of the silicate the asbestos fiber by a process of hydrolysis, probably at the beginning of deterioration and decomposition of the material, in connection with the lung tissue. I cannot say much about the occurrence of smaller objects of similar kind in silicosis because I see very little silicosis. I think we have got to break down pneumoconiosis into consideration of the effects of special kinds of dusts; that is, the material making up the dust rather than considering silicosis as a whole. It is not unlikely that there are other dusts that have not yet been studied which may come in for some part in pneumoconiosis. I have studied the dust of fertilizer factories, in the lungs of workers without discovering any change in the dust at all, or any influence on the lung. Dr. Sweany is correct about the opportunity for collection of these larger objects through the lymphatic circulation of the lung as compared to the smaller granules of silicosis. They collect more along the bronchial route, that is around the bronchi but they do occur in the lymph nodes of the hilus to a surprising extent. When one considers the size of them and how these rather angular particles must be transported through the lymphatics to arrive finally in the numbers I have seen in some lymph nodes, it is astonishing. I believe, however, that more of the deteriorated forms are seen in lymph nodes than in the lung tissue.

Clinical Notes, Suggestions and New Instruments

BURNS FROM IGNITION OF CELLULOID COMBS

HOWARD FOX, M.D., NEW YORK

The danger of severe burns from ignition of celluloid combs is not generally recognized by the public. Such burns have usually occurred while the so-called water wave was being made in the hair. In this beautifying process the scalp is first shampooed or simply moistened, the combs are placed in suitable position and the hair is then allowed to dry by room temperature or by artificial heat. It is during the drying process by artificial heat that disastrous results may take place if the heating apparatus is too close to the hair.

Six cases of severe burns from the ignition of celluloid combs have come to my attention in the last few years. In all of them the scalp was injured by third degree burns causing scars and permanent loss of hair. All except one of the patients also had burns on other parts of the body. Two of them were severely injured when the clothing was set on fire.

In one of these cases the accident occurred in a beauty parlor, in the others when the victims were at home. The source of heat used for drying the hair in these cases was either an electric lamp, a gas heater or a stove.

REPORT OF CASES

CASE 1 (Oct. 14, 1927).—Mrs. M., aged 40, while visiting friends in a German city attempted to produce a water wave using twenty or more celluloid combs which she had brought from the United States. She then dried her hair near a gas lamp stove. Ignition of the combs produced a third degree burn of almost the entire vertex and upper occipital region. The burns healed in ten weeks. When seen in the hospital

after the lesions had healed, the affected part of the scalp was red, atrophic and bald. There was also some scarring of the left side of the forehead and left ear as a result of the burns.

CASE 2 (Oct 17, 1927)—Miss O, aged 32 while having a water wave at a beauty parlor suffered a third degree burn 3 by 4 inches (7.6 by 10 cm) on the parieto occipital region. One or more of the combs ignited from the heat of a large lamp. On putting her hand to her scalp she also sustained second degree burns of her palm and fingers. The lesion of the scalp was healing at the end of three weeks when the patient was last seen.

CASE 3 (March 31, 1930)—Miss P, aged 25, while giving herself a water wave three years previously, used four celluloid combs. In drying her hair she sat in front of a gas heater. The combs ignited and the flames were extinguished by her mother, who threw a blanket over the patient's head. The burned area required four months to heal. At the time of examination she presented a completely bald atrophic area about 2 inches in circumference on the frontoparietal region.



Fig 1 (case 2)—Third degree burns of scalp

CASE 4 (July 17 1931)—Miss X, aged 18 while waving her hair in December 1929 used six celluloid combs and dried the hair with a small electric hand lamp. As a result of ignition of the combs and clothing she sustained burns of the scalp face ears neck and both shoulders and right hand. The burns varied from second to third degree and required subsequent skin grafting on the scalp face and shoulders. As a result of her injury she was confined to bed at home and in a hospital for three months. Examination showed several bald atrophic areas of the scalp the largest being 2½ inches (6.3 kg) in the longest dimension. There was some loss of tissue of the right helix forehead nose upper part of the cheek and right eyebrow. There were also slightly elevated scars on the shoulder and smooth scars on the neck on the supraclavicular region and on several fingers.

CASE 5 (July 15 1931)—Miss H, aged 18 while waving her hair with celluloid combs in August 1930 used an electric lamp for drying purposes. The combs ignited burning her clothing and producing severe burns which confined her to bed for six weeks. Examination showed four areas of baldness and scarring in the left parietal region the largest area being 1½ inches in length. There were also keloidal scars in the right axilla the mastoid and supraclavicular regions and the right elbow.

CASE 6 (June 24, 1936)—Miss M D, aged 22, a patient of Dr Maurice J Costello, gave herself a water wave Oct 10 1935, with twelve celluloid combs. While using a heat lamp for drying the hair she heard an explosive sound, followed by burning of her hair and some of her clothing. She sustained third degree burns of the scalp hands and left knee which required hospitalization for two months. Some of the burns did not heal completely until the end of one year. She now presents an area of permanent baldness the size of a palm and scarring in the right parietal region. There is a smaller scar on the right side of the forehead and there are also scars on the hand and right knee. When performing the water wave the patient thought she was using 'india rubber' combs. However they burned suddenly in an explosive manner, and one of them submitted later to Dr Costello proved to be made of celluloid and not of rubber.



Fig 2 (case 5)—Scars from burns due to ignition of celluloid combs and clothing. The patient was confined to bed for six weeks.

COMMENT

Combs for the production of water waves are frequently made of celluloid and apparently owe their popularity to the fact that they are light in weight, flexible and cheap. They are sold in large numbers at some department stores and at



Fig 3 (case 6)—Scar from burn of scalp which required a year to heal. The patient remained in the hospital for two months.

practically all five and ten cent stores. All celluloid combs are extremely dangerous to use in the hair if artificial heat is applied for drying purposes. Celluloid combs burn almost instantaneously and noiselessly and set fire to the hair before the victim realizes what has happened.

Samples of different varieties of combs for making water waves were obtained from twenty different stores in the metropolitan district of New York. The majority of the combs were made of celluloid, some were made of hard rubber and a few were of metal.

Metal combs are naturally safe but they are not widely used probably because they are rather heavy and stiff and tend to scratch the scalp. Hard rubber combs are more popular, though most of them are inflammable. They are, however, somewhat less dangerous than celluloid combs, since they do not burn as rapidly and they are apt to give a crackling sound of warning on ignition. One type of comb was advertised as being "noninflammable." This did not prove to be true, as a sample that was purchased burned readily. This was a metal comb coated with lacquer.

A warning of the danger of ignition of inflammable combs is often given the purchaser, but it is apparently seldom heeded. Captions such as "inflammable, avoid heat" and the like are often printed on the carton containing the combs for sale or in some cases are stamped on the individual comb. On some there is no warning whatever. On two occasions the saleswoman stated that certain combs were not at all inflammable, though when tested later they burned almost instantaneously when a match was applied to them.

It is hard to understand why a manufacturer or seller of a dangerous article such as celluloid combs should not at least protect himself against possible litigation by suitable warning of fire hazards. My contention is however that even though such a warning is given regarding the inflammability of celluloid combs, they should never be allowed to come in close contact with heat.

SUMMARY AND CONCLUSIONS

1 Six cases of third degree burns followed ignition of celluloid combs, which were used by women for producing "water waves."

2 Celluloid combs should never be used when heat is applied to dry the hair.

140 East Fifty-Fourth Street

PLEURAL ASCITES THE RESULT OF TRAUMATIC RUPTURE OF THE DIAPHRAGM IN A CASE OF LATENT HEPATIC CIRRHOSIS

SAMUEL GOODMAN MD TULSA OKLA

A careful search of the literature on traumatic rupture of the diaphragm of which there are well over 1,000 cases recorded, fails to show one similar to the following case. The unusual angles presented during the course of the patient's illness provided a most difficult problem in diagnosis.

REPORT OF CASE

History—A man aged 56 an oil producer admitted to St John's Hospital Jan 17 1937, complained of cough shortness of breath, weakness and fever. Three days before admission a temperature of 103 F developed with increasing cough and dyspnea. Dulness was found over the base of the right lung and the breath sounds over the same area were quite distant. The fever abated but the area of dulness increased during the next two days. He was referred to my service at the hospital on the following day.

The patient had been in an automobile accident Dec 9, 1936 and was admitted to another hospital in the city with a fracture of the sternal end of the right clavicle and a fracture of the second and third ribs on the right side near the sternal junction. At that time he was in moderate shock and slightly cyanosed. He had a cough with expectoration of frothy blood and subcutaneous emphysema over the wall of the upper right side of the chest. The temperature was 100.4 F, the pulse was 80 and the respiration rate was 28 and shallow. Examination of the chest at that time showed evidence of collapse of the right lung. The white blood cell count was 10,650 polymorphonuclear leukocytes 82 per cent lymphocytes 14 per cent monocytes 2 per cent eosinophils 2 per cent. The urine showed a trace of albumin with occasional hyaline casts and a few pus cells. The Kahn reaction of the blood was negative. During his stay in the hospital the cyanosis

gradually disappeared, but he continued to cough and had a temperature ranging from 98 to 100 F. He was discharged December 18. He was seen several times at his hotel and continued to improve, although he still had slight elevations of temperature, cough and dyspnea on moderate exertion.

His past history was irrelevant except for the fact that he drank alcoholic liquors freely and that he had syphilis which had been treated intermittently since 1929. He had had considerable antisyphilitic treatment, including a course of malarial treatment in 1931 at which time it was thought that there was some evidence of dementia paralytica. He continued, however, to carry on a successful business until the date of the accident. There was no history of gastro-intestinal symptoms or of systemic disturbances.

Examination—The patient was fairly well nourished and developed with slight dyspnea, but apparently he was in no great discomfort. Examination relative to the head and neck was negative except that the mouth was edentulous, the tonsils were large but not septic, and there was some enlargement of the superficial veins on the right side of the neck. The chest was elliptic, the right side being larger than the left. There was a bony deformity of the right clavicle at the sternoclavicular articulation. No expansion could be detected on the right side, which was absolutely flat on percussion over the apex to the base. Breath sounds were distant throughout the entire right side of the chest. Tactile and vocal fremitus were diminished. The left lung was clear. Examination of the heart showed the point of maximum impulse at the fifth interspace in the left midaxillary line. The sounds were of good quality and the rhythm was regular. The abdomen was scaphoid. There were no masses or muscular tenderness. Some fulness and increased resistance was noted in the upper right quadrant below the costal margin. There were no dilated superficial veins. Neuromuscular examination was negative. There was no edema of the extremities. The genitourinary tract was normal except for a scar 4 mm in diameter on the right side of the glans penis. Rectal examination was negative. The laboratory examination showed hemoglobin 15 per cent, red blood cells 4,200,000, white blood cells 13,000, neutrophils 78 per cent lymphocytes 20 per cent, eosinophils 1 per cent, basophils 1 per cent, Cook-Ponders index 191. The temperature was 99.6 F, pulse 80, respiration rate 22. The Wassermann and Kolmer reactions were two plus; the Kahn reaction was negative and the Kline reaction was two plus. The urine was normal except for a few white blood cells and a specific gravity of 1.030. Roentgenograms of the chest showed a marked opacity of the entire right lung field with displacement of the heart and mediastinum to the left. Jan 18 1937 the right side of the chest was aspirated and 3,000 cc. of a straw colored clear fluid was obtained which had a specific gravity of 1.012 and showed but few cells and no bacteria. Culture was negative. Three days later, 2,400 cc. of the same type of fluid was aspirated. Following this aspiration a succession splash could be obtained and there was amphipneic breathing above the level of the fluid.

Radiologic examination of the chest on the following day showed pneumothorax extending to the apex with the fluid in the interspace and a marked opacity below to the base. The heart was still displaced to the left. Examination January 22 showed evidence of a reaccumulation of fluid which increased gradually the next three days. January 28 5,200 cc. was aspirated. January 30 2,500 cc. of fluid was aspirated. February 1 3,700 cc. of the same type of fluid was aspirated. Roentgenograms of the chest February 2 showed the level of fluid at the third rib anteriorly with pneumothorax above it. February 3, the white blood cells numbered 9,100, neutrophils 88 per cent lymphocytes 12 per cent Cook-Ponders index 211. February 6 the right side of the chest was aspirated and 3,000 cc. of fluid was obtained. An examination of this fluid showed 85 per cent neutrophils 5 per cent eosinophils and 10 per cent other types. Culture was negative. February 8, 650 cc. of the same type of fluid was aspirated. In view of the rapid refilling of the right pleural cavity with fluid it was deemed advisable to determine if possible the cause of this rapid refilling. A total of 20.4 cc. of fluid was aspirated during a period of twenty-one days. February

10, roentgenograms taken both in the supine and in the upright position showed no free iodized oil in the pleural cavity. It did show a marked compression of the right lung with good filling of the left bronchial tree. The upper fluid level in the right side of the chest was at the fourth rib.

Course—During the period from the date of entrance to February 11 the patient was not unusually uncomfortable. The temperature range was from 98 to 101 F. There was moderate discomfort of the chest and some anorexia with increasing loss of weight and increasing weakness. February



Fig 1—Appearance Feb 10 1937 on bilateral injection of iodized oil with patient in supine position. Note compression of right bronchial tree and finger-like opacity in region of right diaphragmatic sulcus. Autopsy proved this to be omentum projected into the pleural cavity.

12 the patient became drowsy, the skin developed an icteric tinge, the abdomen became distended, and an indefinite fluid wave could be obtained. The Wassermann reaction of the spinal fluid was negative. During the ensuing twenty-four hours the patient failed rapidly. February 13, nonprotein nitrogen was 36 mg. The icterus index could not be determined because of hemolysis. Anuria developed and he became comatose and died, apparently of acute liver failure. Autopsy was performed by Dr. I. A. Nelson two hours after death.

Autopsy—The body was well developed but

somewhat emaciated. External examination showed no jaundice in artificial light, no scars were evident. The bones were regular except for some protuberance of the right clavicle at the sternoclavicular junction. The pupils were dilated and equal. Internal examination of the thorax showed the right pleural cavity filled with a straw-colored fluid and all lobes collapsed. The right diaphragm had a perforation about 2 cm in diameter at the dome with a portion of the omentum passing through it. The omentum was adherent to the anterior edge of the perforation but failed to close the opening. The tip of the little finger could pass through the unclosed portion. There were numerous small capillaries both on the diaphragm and on the omentum at the region of the adhesion. About 10 cm of the omentum extended into the pleural cavity. This free portion of omentum was fanlike and when spread over the perforation tended to act as a flap valve. There was an additional valve mechanism formed when the abdominal pull on the omentum brought the smooth free edge of the perforation against the liver. Thus there was a free opening between the peritoneal and the pleural cavity but any tendency for fluids to flow from the pleural cavity into the peritoneal cavity was prevented by either or both valve actions.

The right parietal and visceral pleurae appeared fairly normal. The collapsed lobes of the right lung showed no areas of induration. The left pleura and lung showed no pathologic changes. The pericardial sac contained about 300 cc of straw-colored fluid. The heart weighed about 250 Gm with valves, musculature and coronary arteries normal. The aorta showed a moderate degree of arteriosclerosis. The mediastinum and heart were somewhat deflected to the left but were not fixed.

Examination of the abdominal cavity showed a small amount of free fluid. The omentum was relatively small and directed over the anterior edge of the liver to the dome of the right diaphragm, where it was adherent, as already described. The liver weighed 870 Gm, it was pale with surfaces uniformly nodular with nodules about 1 cm in diameter and the capsule somewhat fibrous. The cut surface of the liver was dry and fairly smooth, with traces of yellowish mottling and a slight granularity. The gallbladder was not distended. It emptied

readily and did not contain any stones. The spleen weighed about 360 Gm. It was a purplish gray. The capsule was smooth, gray and somewhat thickened with a firm consistency. The cut surface was fairly dry. The peritoneum showed numerous delicate but distinct capillaries extending from the cardiac end of the stomach to the spleen. The pancreas weighed about 60 Gm and was firm without tumors, hemorrhages or areas of softening.

The esophagus showed some varicosities. The cardiac end of the stomach showed some congestion. The pylorus appeared edematous. There was freedom from ulceration or tumors. The duodenum, jejunum, ileum, colon sigmoid and rectum appeared normal. The adrenals did not show tumors, hemorrhages, cavitation or abnormalities.

The right kidney weighed 130 Gm and the left kidney 120 Gm. The surfaces were smooth, the capsules stripped easily and the cortex and medulla were distinct. The pelves were moist, smooth and of a pinkish gray. The ureters showed no dilatations or abnormalities. The bladder was empty. The mucosa was velvety and the walls were regular. The prostate showed no enlargement or induration. The brain was not examined.

The anatomic changes found were (a) atrophic cirrhosis of the liver, (b) traumatic perforation of the right diaphragm, (c) hernia of omentum into the right pleural cavity with diaphragmatic adhesion, (d) right hydrothorax, (e) compression collapse of the right lung, (f) esophageal varices, (g) mild gastritis and (h) splenomegaly.

On microscopic examination (a) the heart muscle showed some nuclear anisocytosis and slight fibrous infiltration, (b) the left lung showed some recent bronchiolitis and the right lung marked atelectasis, (c) the kidneys showed cloudy swelling and focal hemorrhagic nephritis, (d) the liver showed lobular atrophy and regeneration with marked interlobular fibrosis. There were some small areas of fatty degeneration and some similar to central necrosis except that the lobular architecture did not conform to the venous distribution.

In a collection series of 1,003 cases of diaphragmatic hernia Hedblom found that 34.9 per cent were of traumatic origin.¹ About 95 per cent of the traumatic hernias occur on the left side.² There are several theories suggested as to the low incidence of traumatic hernias on the right side. It is thought that the liver acts as an effective protection to the right side of the diaphragm and that, owing to the structure of the right side, more resistance is offered to sudden increases in intra-abdominal pressure. As a result of the protection afforded by the liver, hernias on the right side are not as large as those which occur on the left side. About 50 per cent of the right diaphragmatic hernias are located centrally and usually contain only omentum if the opening is small.

Reasoning from the changes found at autopsy, this patient had a latent cirrhosis of the liver. The chest and abdominal injury apparently ruptured the dome of the right diaphragm with a resulting omental hernia, which acted as a flap valve. This allowed free access of fluid from the supracolic basin and effectively prevented fluid from accumulating in the abdominal cavity in any demonstrable quantity. The trauma either contributed to or occurred coincidentally with that critical stage of liver dysfunction during which ascites



Fig 2—Appearance February 10 on bilateral injection of iodized oil with the patient sitting upright. Note upper level of fluid pneumothorax and collapsed lung.

1 Lewis Dean Practice of Surgery Hagerstown Md W F Prior Co Inc 5 18 (chapter 7) 1930
2 Lewis Dean Practice of Surgery 5 20 (chapter 7) 1930

develops. While latent cirrhosis of the liver, often unrecognized during life occurs commonly, the circumstances present in this case successfully masked a condition which ordinarily would be considered in making the diagnosis. At no period, except for forty-eight hours before death, was there any evidence of demonstrable fluid in the abdominal cavity.

Persistent and rapid reaccumulation of serofibrinous fluid in the pleural cavity occurs most commonly in tuberculosis and malignant disease. Since neither one of these could be demonstrated the possibility of bronchial fistula was considered particularly in view of the fact that the right lung would not reexpand. An effort to demonstrate the possibility of a bronchial fistula by injection of iodized oil was without result. The roentgenograms show the difference between the compressed bronchial tree of the right lung and the normal bronchial tree of the left lung. I believe that this case illustrates another, although rare, cause of rapid reaccumulation of fluid in the pleural cavity to be considered in differential diagnosis.

Medical Arts Building

SEVERE DERMATITIS MEDICAMENTOSA FOLLOWING THE ADMINISTRATION OF SULFANILAMIDE

J. OWEN FINNEY, M.D., GADSDEN, ALA.

The initial clinical and experimental report of the use of sulfanilamide (para-amino-benzene-sulfonamide) in this country was by Long and Bliss.¹ Subsequent reports have shown its worth in the treatment of hemolytic streptococcus infection,² meningococcal infection,³ and gonococcal infection,⁴ and one report has been concerned with its apparent efficacy in the treatment of severe gas bacillus infection.⁵

Certain toxic manifestations have been recognized since early in its use. These are dizziness, lassitude, general malaise, cyanosis, sulfhemoglobinemia and fever. Harvey and Janeway⁶ reported three cases of acute hemolytic anemia that developed during the administration of the drug, and all three experienced prompt recovery following blood transfusions. Schwentker and his associates⁷ mention the fact that a morbilliform rash occasionally occurs in patients when sulfanilamide is used in the treatment of streptococcal infections. Hageman⁷ states that such a rash appeared in about one half of his cases that showed a febrile complication following use of the drug. As a rule, all these toxic manifestations have rapidly receded with reduction of the dosage or withdrawal of sulfanilamide.

I have at the time of this writing been unable to find a case reported in which the skin manifestations following the use of sulfanilamide have been of sufficient severity to demand hospitalization. For this reason the case reported herein is of importance.

REPORT OF CASE

History.—I. R., a white man aged 29 married a farmer first seen Aug. 7, 1937, complained chiefly of "skin trouble and itching." He had consulted a physician some two weeks previously who told him that he had an acute recurrence of an old gonorrheal prostatitis associated with a cystitis. He had been given a prescription for some tablets, of which he took four four times daily for one day, three four times daily for two days and two four times daily for eight days. (Communication with his physician revealed that the prescription was for sulfanilamide.) About the sixth or seventh day of treatment he began to notice rather marked itching of the skin of the

face, arms and chest. He attached no significance to it and continued to take the drug. The symptoms increased in severity and on the last day of treatment he noted the appearance of a rash over his face, arms and chest. During the two days previous to admission marked swelling of the face and arms had occurred and the rash had become notable on the back of the buttocks and the dorsum of the feet. He had not been in contact with arsenic to his knowledge and had had no other medicine for some time prior to the use of the sulfanilamide. His past history revealed that he had had measles; he had never had any allergic manifestations. The family and personal histories were irrelevant.



Appearance of patient on second day in hospital. There had been no improvement since admission but the lesions were still quite distinct and the edema had not completely subsided.

The patient was obviously very ill and was immediately admitted to the Holy Name of Jesus Hospital for examination and study.

Physical Examination.—The temperature was 101.6 F, the pulse 120, the respiration rate 20 and the blood pressure 140/90, systolic, 80 diastolic. He was exceptionally well developed and well nourished and was oriented and cooperative though quite uncomfortable. He rubbed various areas of his skin frequently and complained bitterly of generalized itching and of "tightness" of his face. There was a symmetrical maculopapular rash over the body that was most marked on the face, anterior surface of the chest, flexor surface of the arms and extensor surface of the fingers. A similar, though less severe reaction was present over the buttocks, posterior part of the thighs and the dorsum of the feet. The lesions were in some areas discrete while in others they were confluent so as to form large patches. There was an associated edema of the face so well marked to all but close the eyelids, over the chin there was corneal crusts. Edema of the arms was present to a mild degree. The fingers were so swollen that the patient could not make a tight fist. The palms and soles were uninvolved. The mucous membranes were of good color and there were no lesions. There was no local or general glandular enlargement. There was no urethral discharge and the prostate was though mildly boggy was not tender. The remainder of the examination was not remarkable.

A voided specimen of urine was slightly cloudy and had an acid reaction; specific gravity was 1.015, albumin was

- From the Guice Morgan Clinic.
1. Long P. H. and Bliss Eleanor A. Para Amino Benzene Sulfonamide and Its Derivatives. Preliminary Report. J. A. M. A. 108:32-37 (Jan. 2) 1937.
2. Anderson E. D. Hemolytic Streptococcus Meningitis. J. A. M. A. 108:1591-1592 (May 8) 1937.
3. Mellon R. R., Gross Paul and Cooper F. B. Sulfanilamide and Protonin in Hemolytic Streptococcus Infection. J. A. M. A. 108:1854-1861 (May 29) 1937.
4. Schwentker L. F., Gelman Sidney and Long P. H. The Treatment of Meningitis. Meningitis with Sulfanilamide. J. A. M. A. 108:1407-1408 (Oct. 14) 1937.
5. Heston J. A. C. Sulfanilamide in Gonococcal Infection. J. A. M. A. 108:1822-1828 (May 29) 1937.
6. Behlman H. K. (a) Gangrene Treated with Sulfanilamide. J. A. M. A. 109:1 (July 24) 1937.
7. Harvey A. M. and Janeway C. A. The Development of Acute Hemolytic Anemia Following the Administration of Sulfanilamide. J. A. M. A. 109:1 (July 19) 1937.
8. Heston J. A. C. Clinical Experience in the Use of Sulfanilamide at the New Haven Hospital. J. Pediatr. 11:19-197 (Aug.) 1937.

plus and sugar was not present. The sediment was loaded with white blood cells and there was an occasional large clump. The hemoglobin was 90 per cent (Sahli), the erythrocyte count was 4,900,000, the leukocytes numbered 11,350 with a differential of 65 per cent polymorphonuclear neutrophils, 29 per cent lymphocytes, 4 per cent eosinophils and 2 per cent basophils. The stool was not notable. The nonprotein nitrogen was 31 mg per hundred cubic centimeters of blood. The fasting blood sugar was 93 mg per hundred cubic centimeters of blood. The blood Wassermann and Kahn reactions were negative. Stained sediment of the urine showed pus cells but no gram negative intracellular or extracellular diplococci. A fixed smear of the prostatic fluid showed pus cells but no organisms. The phenolsulfonphthalein renal function test revealed 83 per cent of the dye in two hours. No determination of the sulfanilamide content of the blood was attempted.

Course.—The patient was placed at rest in bed and given a liquid diet. Fluids were forced to 4,000 cc daily. On admission the lesion so greatly resembled a very early arsenical dermatitis that oatmeal baths were employed at frequent intervals. He obtained such marked symptomatic relief from these baths that they were continued until his discharge from the hospital. No other therapy was given and the symptoms gradually subsided over a period of four days, on the fifth day the patient left the hospital with a normal temperature, the skin was practically clear. Since leaving the hospital he has been seen at frequent intervals and there has been no recurrence of the dermatitis. No attempt has been made to reproduce the condition by giving the patient additional sulfanilamide. The illustration shows the patient on the morning of the second day in the hospital at which time he had already begun to improve.

SUMMARY

In a case of dermatitis medicamentosa following the administration of sulfanilamide (para-amino-benzene sulfonamide) the skin manifestations and general condition were of sufficient severity to demand hospitalization of the patient. Recovery was rapid, complete and uneventful with the employment of palliative measures. No attempt was made to reproduce the picture by repeating sulfanilamide after recovery.

American National Bank Building

EXFOLIATIVE DERMATITIS FOLLOWING
SULFANILAMIDE

CORDON B. MYERS, M.D., E. C. VONDER HEIDE, M.D., AND
MATTHEW BALCERSKI, M.D., DETROIT

With full doses of sulfanilamide or related compounds, such toxic manifestations as weakness, lassitude, dizziness, anorexia, nausea, slight cyanosis and mild acidosis occur frequently. According to Long and Bliss¹ it is not necessary to discontinue the drug when these symptoms appear. With the development of fever or jaundice not attributable to the infection under treatment, withdrawal of the drug is advised. The only grave complications of sulfanilamide therapy reported to date are one case of sulfhemoglobinemia resulting in death,² three fatal cases of agranulocytosis³ and five cases of acute hemolytic anemia⁴ in which recovery occurred after repeated transfusions.

Morbiliform skin eruptions and hyperpyrexia have been described during the course of sulfanilamide therapy⁵ but no

severe protracted dermatitis has been reported thus far. The following case of exfoliative dermatitis is therefore presented.

REPORT OF CASE

A white man, aged 25, contracted gonorrhea in March 1937. After an unsuccessful trial of urethral irrigations and instillations, sulfanilamide therapy was instituted. He received 75 grains (5 Gm.) orally on June 23 and 50 grains (3.3 Gm.) daily thereafter until July 17. The discharge subsided temporarily early in July, only to return after prostatic massage disappearing again about the middle of July. There were no toxic symptoms whatever until July 17 when he began to notice weakness, lassitude, anorexia, dull aching pain in the epigastrium, giddiness, pain in the eyes, and dryness in the throat and conjunctivae.

Between June 23 and July 17 the patient had been given 1,300 grains (86.6 Gm.) of sulfanilamide. No other medication was administered during this period. The dose of the drug was reduced to 25 grains (1.6 Gm.) July 18, but as the symptoms did not abate it was discontinued July 19. The temperature that day was reported to be 102 F. July 20 the eyelids began to swell and a morbilliform rash appeared on the trunk. The rash soon spread over the entire body and became very



Fig. 1.—Appearance of patient three days after hospitalization showing distribution of dermatitis on the face and upper extremities.

pruritic, whereas the edema extended to the trunk and extremities. July 25 he noted transient numbness and weakness in the legs. The next day he began to vomit frequently. July 27 he was admitted to the Receiving Hospital and at this time came under our care.

The past history was irrelevant. He had been a labeler in a bottling works. On admission the patient was well developed and well nourished and weighed 175 pounds (79 Kg.). The temperature was 101 F., the pulse 120, the respiration rate 22. There was a bright red confluent maculopapular eruption over the entire body. In addition there were many purpuric spots on the hands, feet and legs. No urticarial lesions were present. There was generalized edema most marked on the face and upper extremities. The lips were distinctly cyanotic. There was no evidence of hemorrhage from the mucous membranes. The heart and lungs were normal. The blood pressure was

From Receiving Hospital and Wayne University College of Medicine.
1 Long P. H. and Bliss Eleanor A. The Use of Para Amino Benzene Sulfonamide in the Treatment of Infections Due to Beta Hemolytic Streptococci, Pneumococci and Meningococci. South M. J. 30: 479 (May) 1937.

2 Frost J. B. D. Sulfhemoglobinemia Following Antistreptococcal Therapy. Lancet 1: 510 (Feb. 27) 1935.

3 Borst J. G. C. Death from Agranulocytosis After Treatment with Irontosil. Phylax. Lancet 1: 1819 (June 26) 1937. Young C. J. Agranulocytosis and Para Amino Benzene Sulfonamide. Brit. M. J. 2: 105 (July 17) 1937. Model A. Agranulocytosis and Para Amino Benzene Sulfonamide. Ibid. 2: 295 (Aug. 7) 1937.

4 Harvey A. M. and Jewett C. A. The Development of Acute Hemolytic Anemia During the Administration of Sulfanilamide. J. A. M. A. 109: 2 (July 3) 1937.

5 Unshelm E. Zur Behandlung von Kindern mit Prontosil. Arch. f. Kinderh. 110: 76 (Feb. 12) 1937. Hygman P. O. Clinical Experience in the Use of Sulfanilamide at the New Haven Hospital. J. Pediatr. 11: 195 (Aug.) 1937. Hygman P. O. and Blake F. G. A Specific Febrile Reaction to Sulfanilamide. J. A. M. A. 109: 642 (Aug. 28) 1937.

118 systolic, 84 diastolic. The liver edge was beneath the costal margin and the spleen was not palpable. No urethral discharge was present. Neurologic examination was negative.

COURSE

The temperature ranged between 100 and 103 F, averaging 101 F during the first week in the hospital. It reached 98.6 F August 2 and remained normal after August 4. The pulse was constantly between 110 and 120 during the first week. Nausea

Protocol of Case, Laboratory Examinations

Urinalyses Specific gravity 1.006 to 1.020 albumin negative dextrose negative sediment negative

Blood Cytology

Date	Hemoglobin	Color Index	Red Blood Cells	White Blood Cells	Neutrophils				
					Nonflam. per Cent	Flam. per Cent	Eosinophils per Cent	Lymphocytes per Cent	Posiophils per Cent
7/27/37	16.4	0.95	5.45	90,000	47	20	1	7	25
7/28/37				64,000	28	16		12	44
7/29/37	18.4	1.10	5.24	73,200	18	21	1	16	44
Transfusion 200 cc									
7/30/37	16.6	0.90	5.38	71,200	18	16		11	55
7/31/37	15.6	0.90	5.40	43,000	16	18		10	56
8/2/37	13.2	1.00	4.04	48,600	29	15		10	38
8/3/37	13.4	0.90	4.34	26,800	33	4		20	43
8/4/37	13.0	0.80	4.64	39,100	15	10		20	40
8/5/37	12.8	1.00	4.08	33,400	10	8	1	27	54
8/7/37	12.4	0.90	4.31	22,000	16	9		32	43
8/11/37	13.8	1.00	4.38	19,422	18	20		24	38
8/19/37	12.2	0.80	4.50	13,700	16	24		12	47
8/24/37	14.4	0.90	4.65	13,400	30	18		28	23

Bleeding and Clotting Time

7/27/37	Bleeding time 5 min 30 sec clotting time 3 min 15 sec platelets 201,600
7/30/37	Rumpel-Leede test markedly positive
8/4/37	Bleeding time 2 min 30 sec clotting time 4 min
8/26/37	Bleeding time 4 min 30 sec clotting time 5 min

Spectroscopic Examination No evidence of methemoglobin or sulfhemoglobin

Serologic Reaction Negative

Blood Chemistry and Renal Function Tests

7/28/37	Urea 19.2 chlorides 363.0 carbon dioxide combining power = 50.0 vol %
7/30/37	Serum albumin 3.03% Serum globulin 1.08% carbon dioxide combining power = 47.0 vol %
8/9/37	Carbon dioxide combining power = 23.0 vol %
8/18/37	Urea clearance (maximal) 72 cc cleared per minute carbon dioxide combining power = 61.0 vol %

Serum Pigmentation

7/28/37	Icterus index 21.0 van den Bergh moderate immediate direct reaction bilirubin 2.0 mg %
7/30/37	Icterus index 15.0 van den Bergh weak immediate direct reaction bilirubin 1.02 mg %
8/9/37	Icterus index 7.0
8/17/37	Icterus index 7.5

Liver Function Tests

	Urobilinogen (Highest Positive Dilution Detectable in Urine)
7/25/37	1/60
7/29/37	1/90
7/30/37	1/30
8/2/37	Trace
2/3/37 and onward	Trace

Hippuric Acid Test

7/30/37	2.58 Gm benzole acid recovered as hippuric acid in 2 hour
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Oral Galactose Tolerance Test (40 Gm)

8/3/37	170 Gm galactose recovered
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and vomiting ceased in three days. The edema was slowly absorbed. The purpuric spots ceased to appear after the first week in the hospital. The skin eruption and pruritus, however, were refractory to aqueous and oily lotions and colloid bath. Desquamation began on the hands and gradually extended over the entire body. At that stage the rash resembled the exfoliative dermatitis due to arsenamine.

A patch test August 22 was definitely positive. In addition to an acute dermatitis beneath the patch there was a flare up in the skin eruption elsewhere with an increase in pruritus a

recurrence of the purpura, and a rise in the eosinophil count from 1,640 per cubic millimeter to 3,760 per cubic millimeter.

The patient was discharged to the outpatient department August 30. A dull red, confluent, papulosquamous eruption was still present on the hands, feet and legs. Prostatic mass produced a thin purulent discharge which revealed gram positive staphylococci but no gonococci.

COMMENT

The fact that sulfanilamide was the only drug taken before the eruption appeared, together with the positive patch test, would indicate that it was responsible for the dermatitis. Since the blood urea level and the urea clearance test were normal in this case, the poisoning cannot be attributed to renal insufficiency. It is noteworthy that 50 grains (3.3 Gm) was taken daily for twenty-five days before any toxic symptoms developed. Such symptoms as weakness, lassitude, dizziness and anorexia which have been considered of minor importance preceded the serious toxic manifestations by three days during which only an additional 25 grains (1.6 Gm) of the drug was taken. The wisdom of administering sulfanilamide in such doses over so long a period without sulfanilamide determinations of the blood may be seriously questioned.

Certain other features of this case deserve brief comment. The leukocytosis and eosinophilia were much greater than in



Fig. 2—Distribution of purpura on foot three days after hospitalization.

the cases of arsenical exfoliative dermatitis studied by Towle and Swartz,⁶ in which the total leukocyte count averaged 12,400 and the eosinophils 10 per cent. The blood picture was not that of a leukemia. The purpura was probably due chiefly to increased capillary permeability. The jaundice was of short duration and was associated with slight transient impairment of hepatic function. Although there was distinct evidence of no evidence of sulfhemoglobin or methemoglobin was found on spectroscopic examination. The carbon dioxide combining power of the blood fell from 55 volumes per cent on July 2 to 28 volumes per cent on August 9. During this period the patient received 45 grains (3 Gm) of calcium carbonate and 45 grains of calcium lactate daily in addition to a high carbohydrate diet and intravenous administration of dextrose. The acidosis quickly cleared up after the administration of sodium bicarbonate which had previously been avoided because of edema.

SUMMARY

A severe exfoliative dermatitis accompanied by edema, purpura, marked leukocytosis and eosinophilia, acidosis and transient jaundice developed in a patient who had taken 1325 grains (88.3 Gm) of sulfanilamide over a period of twenty-eight days for the treatment of gonorrheal infection.

6 Towle H. P. and Swartz J. H. A Study of the Effects of Common Drugs on the Skin. Arch. Dermat. Syph. 1924.

Special Article

DEATHS DUE TO ELIXIR OF SULFANILAMIDE-MASSENGILL

REPORT OF SECRETARY OF AGRICULTURE
SUBMITTED IN RESPONSE TO
HOUSE RESOLUTION 352 OF NOV 18, 1937,
AND
SENATE RESOLUTION 194 OF NOV 16, 1937

During September and October of 1937 at least seventy-three persons died as a direct result of taking the drug known as "Elixir Sulfanilamide." Twenty other persons who took the "elixir" died but it has not yet been established that this drug was exclusively responsible. The ninety-three deaths occurred in fifteen states, as far east as Virginia, as far west as California.

"Elixir Sulfanilamide" was manufactured and sold by the S E Massengill Company of Bristol, Tenn. According to the firm's books 240 gallons was manufactured. The entire amount has been accounted for.

Before the "elixir" was put on the market, it was tested for flavor but not for its effect on human life. The existing Food and Drugs Act does not require that new drugs be tested before they are placed on sale.

Since the Federal Food and Drugs Act contains no provisions against dangerous drugs, seizures had to be based on a charge that the word "elixir" implies an alcoholic solution, whereas this product was a diethylene glycol solution. Had the product been called a "solution" rather than an "elixir," no charge of violating the law could have been brought.

Of the 240 gallons manufactured, 228 gallons and 2 pints has been seized under federal and state laws, destroyed, collected as laboratory samples or wasted by spillage and breakage. Eleven gallons and 6 pints was dispensed on prescriptions or over the counter sales. Of this amount about half was consumed and caused the deaths, the other half was retrieved before consumption.

The lethal effect of the "elixir" was due to its content of diethylene glycol.

Sulfanilamide is the name of one of a group of closely related chemicals first reported in European medical literature of 1935 to have been used for drug purposes. An editorial from THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, attached as exhibit A,¹ shows that sulfanilamide is potentially dangerous but that properly used it may be brilliantly successful in treating various infections.

The fatal "elixir" was rushed onto the market without adequate test to determine whether or not diethylene glycol may be safely used as a solvent for sulfanilamide despite previously published reports in scientific literature showing that diethylene glycol might be dangerous when taken internally. A few simple and inexpensive tests on experimental animals would have quickly demonstrated the toxic properties of both diethylene glycol and the "elixir."

This report was released to the press on November 26 and is reproduced with minor deletion.—Ed

¹ Sulfanilamide—A Warning editorial J A M A 109 1128 (Oct 1937)—Ed

It will be observed that the preparation is a semi-secret one, that the presence of diethylene glycol is not disclosed, and that no warning of danger appears.

Most of the drug was administered on physicians' prescriptions.

HOW THE "ELIXIR" WAS PRODUCED

Dr Samuel Evans Massengill is sole owner of the S E Massengill Company, of Bristol, Tenn. He holds the degree of Doctor of Medicine and was licensed to practice medicine in 1900. His letterhead bears the statement "Purveyor to the Professions of Medicine and Pharmacy since 1897."

Mr Harold Cole Watkins, chief chemist and pharmacist of the company, holds a degree of Pharmaceutical Chemist. Since 1900 he has been engaged as pharmaceutical, analytical and research chemist by various firms. He joined the Massengill Company in 1935.

For some time before putting "Elixir Sulfanilamide" on the market the S E Massengill Company had been marketing sulfanilamide in capsule and tablet form. In June 1937 the firm's salesmen reported a demand for the drug in liquid form. Near the end of July Mr Watkins, according to his own statement, undertook the problem of finding a suitable liquid vehicle for sulfanilamide. Since sulfanilamide is insoluble in the various liquids commonly employed in making medicines, he tried a number of other solvents. Diethylene glycol was found to dissolve as much as 75 grains of sulfanilamide per fluidounce, but in that concentration it tended to separate out on chilling. Accordingly he decided on 40 grains per fluidounce as a stable preparation and devised the following working formula:

Sulfanilamide	58 3/4	pounds
Elixir flavor	1	gallon
Raspberry extract	1	pint
Saccharin soluble	1	pound
Amaranth solution 3/16	1 1/2	pints
Caramel	2	fluidounces
Diethylene glycol	60	gallons
Water q s	80	gallons

According to Mr Watkins, no tests were made to determine the toxicity of either the separate ingredients or the finished product, or to determine by well known methods available for the purpose whether or not the sulfanilamide decomposed in the diethylene glycol. The so-called control laboratory merely checked the "elixir" for appearance, flavor and fragrance. Dr Massengill confirmed Mr Watkins' statement that no experimental animals were used or clinical tests of any kind made to determine either the effectiveness or the toxicity of the drug before it was put on the market.

Distribution of both commercial [633 shipments] and sample [671-one and two ounce bottles] lots extended over the period from Sept 4, 1937, up to and including Oct 15, 1937.

THE FOOD AND DRUG ADMINISTRATION STEPS IN

The first word of deaths from an unidentified sulfanilamide preparation reached the Food and Drug Administration on Oct 14, 1937, through a telephone call from a New York physician associated with a large drug manufacturing concern. He repeated advices, presumably received through professional or trade contacts, that fatalities had occurred at Tulsa, Okla.

² This formula is in substantial agreement with that determined by analysis by Schoeffel et al of the A M A Chemical Laboratory J A M A 109 1531 (Nov 6) 1937.—Ed

³ The headquarters office of the A M A also telegraphed to the Food and Drug Administration on the same day concerning the presence in the mixture of diethylene glycol.—Ed

Immediately instructions to investigate the report were issued by telegraph to the Kansas City Station of the Food and Drug Administration which is the nearest station to Tulsa. A representative of the administration arrived in Tulsa the following day. He reported by telegraph on Saturday, October 16, that nine deaths had already occurred in Tulsa, including eight children with streptococcic sore throat and one adult with gonorrhea, and that all had taken a product labeled "Elixir Sulfanilamide, The S. E. Massengill Company, Manufacturing Pharmacists, Bristol, Tenn.-Va." [Seizure of all outstanding shipments was immediately ordered.]

Shipping records showed that the suspected "elixir" had come from a Massengill establishment in Kansas City, to which the station immediately sent inspectors. Also an inspector from the Cincinnati station, which is the nearest station to Bristol, and a medical officer from the administration's headquarters at Washington, were sent at once to Bristol.

Inspectors from the New York and San Francisco stations were assigned to investigate distributions from these points.

It was learned that the Massengill Company, following reports of the poisonous effects of the "elixir," had sent out approximately 375 telegrams from Bristol and additional telegrams from its branch houses totaling, according to the firm's statement, some 1,100 in all, requesting the return of outstanding shipments. The texts of these wires follow:

From the Bristol office to customers, on October 15:

"Do not use elixir sulfanilamide shipped. Return our expense."

To salesmen on the same date:

"Elixir sulfanilamide discontinued. Pick up as rapidly as possible all sold in your territory."

From the Kansas City branch to jobbers, druggists and doctors who had received the product, on October 15:

"Have withdrawn product elixir sulfanilamide. Please return unused stocks immediately."

From the New York branch to customers on October 16:

"Return for credit all elixir sulfanilamide you have of our manufacture. Stop. We shall appreciate prompt attention."

On or about October 15, on telegraphed instructions from the Bristol office, the San Francisco branch of the firm instructed its salesmen to have outstanding stocks returned. However investigation revealed that no attempt had been made by that branch to communicate directly with dealers and doctors.

On October 16 the Bristol office wired the New York branch:

"Discontinue sale elixir sulfanilamide. Stop. Wire all salesmen immediately pick up sold. Stop. Wire direct all customers sold to return stock unused."

On the same date the New York branch wired to thirteen of its salesmen who were thought to have sold the elixir and wrote to its remaining twenty-six salesmen, one of whom was in Puerto Rico. Telegrams and letters were practically identical.

Discontinue the sale of elixir of sulfanilamide. Pick up and return all orders of this item previously sold. We are discontinuing immediately the manufacture of this item."

Since these telegrams and letters gave no indication of the dangerous character of the product and were

not calculated to impress receivers with the emergency character of the call for returning the goods, the inspector assigned to the Bristol office insisted that the firm issue the following telegram, dated October 19, to all persons who were listed as having received shipments of the "elixir" from Bristol:

"Imperative you take up immediately all elixir sulfanilamide you dispensed. Product may be dangerous to life. Return expense."

Following similar insistence by the San Francisco, Kansas City and New York inspectors, the branch at those points sent similar telegrams to all consignees, on or about October 19.

As a result of these telegrams, large quantities of the "elixir" were returned to the manufacturers' establishments and there taken under local or federal control. But the extremely dangerous character of the drug necessitated the most searching check to guarantee as far as humanly possible, its complete apprehension. Practically the entire field force of 239 Food and Drug Administration inspectors and chemists were assigned to the work. They had the wholehearted and effective cooperation of state and local food, drug and health authorities. As an additional aid, warnings by newspaper and radio were broadcast.

In spite of the manufacturer's telegrams many shipments were found still in dealers' hands. Innumerable prescriptions filled from these lots, as well as from shipments returned to the manufacturer, were found to have been only partly consumed by the patient and so were recovered.

The essential steps in tracing and apprehending the poisonous drug were (a) listing names and addresses of consignees, dates of shipment, and amounts shipped from the four establishments of the manufacturer; (b) following these to the primary consignees and seizing, if still intact in their possession, (c) if partially used, seizing the residue and following and procuring the distributed portions if not already consumed; (d) checking on lots reported returned to the manufacturer and definitely ascertaining whether such returned lots were intact; (e) if returned lots were not intact searching for dispensed portions.

The magnitude of the task of listing distributions is indicated by the fact that thousands of order slips had to be examined, one by one, in the four distributing houses and that in some cases this procedure had to be repeated in wholesale and retail drug stores to determine what redistributions had occurred. In one establishment alone, 20,000 sales slips were examined.

The task was complicated by the fact that distribution was not made exclusively on physicians' prescriptions which normally would have recorded the name of the patient, but that over the counter sales were made to purchasers, who in some cases were entirely unknown to the druggist. In some instances, doctors had no record of the names and addresses of patients to whom they had prescribed, or the names recorded were fictitious.

The task of interviewing promptly the approximately 200 salesmen employed by the Massengill Company in order to account for salesmen's samples and to check the distribution of physicians' samples and commercial shipments, presented serious difficulties in some cases. A typical instance was that of a salesman who later story includes part of Maryland and Virginia. He first reported to be at a hotel in Washington D. C. He was not there. Forwarding address at 11

Mich., and in Baltimore were investigated only to learn that these were for another man of the same name. After four days' search, the salesman was found at University Park, Md. One salesman in Texas was thoroughly uncooperative and was put in jail by the state authorities before he decided to reveal the necessary information.

At East St. Louis, Ill., forty-nine prescriptions, all for colored people, were filled from two shipments. The only identification on some of the prescriptions were such notations as "Betty Jane, 9 months old" or "Mrs. Jackson (no address)." In a very few instances, recipients of prescriptions bearing no identification have not yet been found, although every effort has been made to warn them by newspaper and radio.

THE PROBLEM BEFORE PHYSICIANS AND PHARMACISTS

Most of the physicians and pharmacists involved in dispensing the "elixir" cooperated willingly and effectively in apprehending outstanding prescriptions.

In contrast was the attitude of a South Carolina doctor, who told the inspector he had dispensed 1 pint 15 fluidounces to three white patients and two Negroes, whose names he did not reveal. He insisted that none of these patients had died. Information acquired by the inspector from other sources showed that the doctor had administered the elixir to seven patients, that three survived, and that a white man, a white girl, and two Negro men had died. One of the fatal prescriptions was traced through neighborhood gossip describing the symptoms of the fatal illness of a Negro employee of a lumber mill. The inspector recognized the symptoms as characteristic of "elixir" poisoning and through the mill superintendent found the victim's sister. She remembered that the doctor had given her brother some red medicine about October 2 or 3. She said that, in accordance with their custom, all medicines, glasses, spoons, etc., had been placed on the grave, which was about 1½ miles back in the fields. Accompanied by the Negroes, the inspector walked to the wooded knoll with its single mound of fresh earth on which lay several bottles, dishes and spoons. One 4 ounce bottle contained about one ounce of the "elixir." It bore the weatherbeaten but legible prescription label of the doctor.

An inspector investigating a Georgia drug store listed as having received one gallon of the "elixir" was informed that the shipment had been returned to the manufacturer at Bristol after only one lot of 6 ounces had been dispensed for one patient. Subsequent investigation showed that this patient had suffered no ill effects. But the inspector assigned at Bristol for the purpose of checking returned lots found 12 instead of 6 ounces missing from the gallon bottle returned by this druggist. Further investigation showed that two additional lots had been dispensed and had caused two deaths.

EFFECTS OF THE DRUG

The victims of the "elixir" were ill from about seven to twenty-one days. They suffered intense pain. All exhibited very much the same symptoms: stoppage of urine, severe abdominal pain, nausea and vomiting, and stupor, convulsions preceded death in some cases. Many persons who took the drug discontinued its use with the onset of unfavorable symptoms and recovered. One person took as much as 7½ fluidounces without ill effect. One child died from less than 2 fluidounces

ACTION UNDER THE LAW

Twenty-five seizures of the "elixir" were effected under the federal Food and Drugs Act. Many lots were seized or embargoed by local officials through action under state or city laws.

The distribution of the shipments from the four establishments maintained by the manufacturer of the "elixir" and the deaths that occurred are shown in the map attached as exhibit B.⁴

Citations are already in preparation for issuance to the manufacturer, in accordance with established procedure, calling on him to show cause why the cases should not be referred to the federal courts for criminal prosecution.

In September 1934 and March 1937 the S. E. Massengill Company was convicted in criminal prosecutions and paid fines for violations of the Food and Drugs Act as recorded in notices of judgment attached as exhibit C. Also included in this exhibit is a notice of seizure of a shipment of one of this firm's drugs.

Records of the Post Office Department show that in 1929 H. C. Watkins the Massengill Company chemist who made the "elixir" was distributing a medicine represented to reduce weight to bring about perfect slenderness and to cause the body to acquire a trim, youthful athletic look. On Oct. 30, 1929, the Watkins Laboratories and others were cited by the Solicitor of the Post Office Department to show cause why a fraud order should not be issued. Mr. H. C. Watkins filed a stipulation with the department agreeing that the sale of the product would be abandoned and not resumed at any future time.

LIMITATIONS OF THE LAW

As indicated earlier in this report, the only basis of action under the Food and Drugs Act against the interstate distribution of the "elixir" was the allegation that the word implies an alcoholic solution whereas the product was a diethylene glycol solution. The fact that the law contains no specific definition of "elixir" may be responsible for Dr. Massengill's statement in his letter to the American Medical Association, carried in the press of November 3, "I have violated no law."

Most drug manufacturers recognize a responsibility to the public far greater than that imposed by existing law. Some are known to have considered making a solution of sulfanilamide in diethylene glycol before the "elixir" was put on the market but abandoned the idea on investigating the toxicity of the solvent. But the attitude of some drug makers is exemplified in Dr. Massengill's statement carried by the press on October 23:

"My chemists and I deeply regret the fatal results but there was no error in the manufacture of the product. We have been supplying legitimate professional demand and not once could have foreseen the unlooked-for results. I do not feel that there was any responsibility on our part. The chemical sulfanilamide had been approved for use and had been used in large quantities in other forms, and now its many bad effects are developing."

That evidence of possible danger from the internal administration of diethylene glycol was available prior to the marketing of the "elixir" is shown by the attached exhibit D.⁵

That a few simple tests on experimental animals would have demonstrated the lethal properties of the elixir is evident from the work reported by the American Medical Association in exhibit E.⁶ These results were confirmed independently by the Division of Pharmacology of the Food and Drug Administration in work yet unpublished.

4 A map showing the number and distribution of the deaths was published in THE JOURNAL November 20, p. 1724.—Ed.
5 von Oettingen, W. F. and Jirouch, E. A. The Pharmacology of Ethylene Glycol and Some of Its Derivatives in Relation to Their Chemical Constitution and Physical Chemical Properties. J. Pharmacol. & Exper. Therap. 42: 355 (Aug.) 1931.—Ed.
6 Elixir of Sulfanilamide-Massengill. Chemical, Pharmacologic, Pathologic and Necropsy Reports. Preliminary Toxicity Reports on Diethylene Glycol and Sulfanilamide. Special article from the A. M. A. Chemical Laboratory. J. A. M. A. 109: 1531 (Nov. 6) 1937.—Ed.

While the "elixir" incident has been spectacular and has received much publicity, aside from the brevity of the period in which the killings occurred it is but a repetition of what has frequently happened in the past in the marketing of such dangerous drugs as dinitrophenol, cinchophen and other toxic substances.

It is worthy of note that, shocking as these instances have been, the actual toll in deaths and permanent injury from potent drugs is probably far less than that resulting from harmless nostrums offered for serious disease conditions. In these cases the harmful effect is an indirect one. Sick people rely on false curative claims made for worthless concoctions and thus permit their disease to progress unchecked. It may be too late when they lose confidence in the nostrum and seek rational treatment.

RECOMMENDATIONS FOR LEGISLATION

To protect the public from drugs which, like the "elixir," are dangerous because of their inherent toxicity, it is the department's recommendation that legislation be enacted to provide at least the following:

1. License control of new drugs to insure that they will not be generally distributed until experimental and clinical tests have shown them to be safe for use. The definition of what constitutes a new drug should include (a) substances which have not been used sufficiently as drugs to become generally recognized as safe, (b) combinations of well known drug substances where such combinations have not become generally recognized as safe, and (c) well known drug substances and drug combinations bearing label directions for higher dosage or more frequent dosage or for longer duration of use than has become generally recognized as safe.

Exemption should be made for new drugs distributed to competent investigators for experimental work. A board of experts should be provided who will advise the Secretary of Agriculture on the safety of new drugs.

It is the department's view that no other form of control will effectively safeguard the public from the dangers of premature distribution of new drugs. To increase the penalties for violations and to require full disclosure of ingredients would be helpful but by no means fully adequate.

In the interest of safety, society has required that physicians be licensed to practice the healing art. Pharmacists are licensed to compound and dispense drugs. Electricians, plumbers and steam engineers pursue their respective trades under license. But there is no such control to prevent incompetent drug manufacturers from marketing any kind of lethal potion. It should be remembered that Dr. Massengill and his chemist Watkins are far better equipped from the standpoint of technical training than many other persons now engaged in the manufacture of drugs.

2. Prohibition of drugs which are dangerous to health when administered in accordance with the manufacturer's directions for use. This would provide a more appropriate basis of action than that on which proceedings were instituted against the "elixir." A number of dangerous drugs are now on the market against which not even a trivial charge of violation can be made.

3. Requirement that drug labels bear appropriate directions for use and warnings against probable misuse. Much injury results from insufficient directions and from lack of warning against overuse or administration to children or use in diseased condition where the drug is dangerous or possibility of drug addiction.

4. Prohibition of secret remedies by requiring that label disclose fully the composition of drugs. Many foreign countries now impose this requirement. Many drugs manufactured in the United States are exported to such countries under labels bearing such disclosure. The same drugs are sold to our citizens under labels that give no hint of their composition.

The physician, and the consumer who acts as physician to himself, both have a right to know what they administer.

Many poisoning cases result from choice of the wrong bottle from the home medicine cabinet, or from bottles left within the reach of small children. In such cases attending physicians are able to proceed intelligently and administer the proper antidotes or other treatment only at labels carry full disclosure of composition. Delays in obtaining this information by communicating with the manufacturer may often mean the difference between life and death.

Physicians are also handicapped in arriving at a correct diagnosis and beginning appropriate treatment when patients come to them after unsuccessful attempts

at self medication with secret remedies. The effect of such remedies may give rise to symptoms leading to erroneous diagnosis. But even if the diagnosis is correct, the kind of treatment to be used may depend on what the patient has been taking. Again in such circumstances, label declaration of composition may mean the difference between life and death.

The foregoing recommendations are limited to provisions which the department believes should be enacted to safeguard the public from the dangers of drugs of one type. That type includes the inherently toxic drugs such as the "elixir," dinitrophenol and cinchophen. Many additional points should be considered if adequate protection is to be extended against even more widespread dangers to health and other abuses of public welfare arising from the inadequate control authorized by the present law over various other types of drugs.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT

HOWARD A. CARTER, Secretary

GENERAL ELECTRIC MODEL F QUARTZ MERCURY ULTRAVIOLET LAMP ACCEPTABLE

Manufacturer: General Electric X-Ray Corporation, 2017 Jackson Boulevard, Chicago

This Model F Quartz-Mercury Ultraviolet Lamp is designed for use in the office or hospital under the direction of a physician. It is arranged to operate solely on alternating current but special equipment may be procured where only direct current is available. The source is a quartz-mercury Uviarc burner, similar to the previously accepted source (THE JOURNAL, Dec 16, 1933 p 1967) but designed so as to minimize obstruction to direct or reflected radiation. It builds up in four minutes and cools in approximately six minutes. The unit is self starting without tilting.

The reflector is chromium plated with a mat finish. The burner housing is equipped with easily manipulated shutters which provide a means of closing off the radiation without turning off the burner. A self winding type meter for reading the distance directly from the burner to the skin of the patient is built into the burner housing. The burner housing can be adjusted to treat a patient prone sitting or even standing. The transformer is mounted in an ornamental base. The weights the lamp, thus preventing it from tipping easily. The 50 or 60 cycle lamps weigh 85 pounds, the 25 cycle or 100 cycle lamps approximately 100 pounds. The on and off switch and control provided, is operated by a foot switch projecting from the base.

The quartz mercury vapor burner consists of a single quartz tube approximately three fourths inch in diameter and 6 1/2 inches long to each end of which is sealed an electrode similar in appearance to the anode of a standard Lyrc. Its length is about 10 1/4 inches. The burner operates directly on alternating current through a special transformer located at the base of the lamp. No tubular tungsten rheostat or other devices or adjustments are required. The transformer is provided with taps to compensate for various line voltages which are adjusted at the time of installation and are touched artery and make the line voltage standard.



General Electric Model F Quartz Mercury Ultraviolet Lamp

siderably. As the line demand is low approximately 400 watts, the lamp may be operated from practically any convenient outlet of suitable voltage and frequency.

At the 30 inch treatment distance the extreme limits of the radiation field measure approximately 46 by 54 inches. At a 40 inch treatment distance it measures approximately 61 by 108 inches. The intensity and quality of the radiation are similar to those produced by the Council-accepted models A, B and C. The time required for an erythema dose is about one minute at a distance of 30 inches.

The burner housing is mounted on a bracket atop the upper part of a two section telescopic tube column counterbalanced by means of a spring within the column. The housing, if permitted, will assume a position approximately half way between the lowest and highest position. The range of adjustment is between 7 feet and 4 feet, 10 inches from the floor.

Lamps are available for operation at 115 or 230 volts, 25, 50 or 60 cycles. The actual frequency available must be within two cycles of the rated frequency.

The lamp was placed in a clinic acceptable to the Council for investigation. Tests were made to substantiate the erythemic claims made for it by the manufacturer. It was found to produce a minimal erythema in one-half minute or less at 30 inches distance, in the average person. It appears to be a satisfactory device for the administration of ultraviolet radiation.

In view of the foregoing report the Council on Physical Therapy voted to include the General Electric Model F Quartz-Mercury ultraviolet lamp in its list of accepted devices.

Council on Pharmacy and Chemistry

REPORTS OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT
PAUL NICHOLAS LEECH Secretary

THE STATUS OF MANDELIC ACID

A report on mandelic acid by Dr. William F. Braasch, Rochester, Minn., was endorsed by the Council and published as a preliminary report (THE JOURNAL March 27, 1937, p. 1033). The conclusion to this report was as follows:

It would appear that the oral administration of mandelic acid is followed by elimination of bacillary infection in the urinary tract in a large percentage of uncomplicated cases. There is no clinical evidence to indicate that it is a severe renal irritant in the presence of a normal renal function provided it is not continued longer than two weeks. Its use is contraindicated when there is evidence of renal insufficiency because of the possibility of causing renal irritation and since (in this condition) it is usually not excreted in sufficient concentration to be bactericidal.

Dr. Braasch's report stressed the undesirable effects of mandelic acid therapy. These included occasional nausea, diarrhea, renal irritation and hematuria. Since the appearance of the preliminary report, other cases presenting these symptoms have been recorded although evidence of serious or permanent renal damage has not been presented.

The toxic symptoms do not seem to be of sufficient intensity or duration to contraindicate the cautious use of the drug. The possibility of their occurrence must, however, be emphasized and is sufficient reason for insisting that the drug be used only under the careful supervision of the physician.

Owing to the somewhat enthusiastic reports which have appeared in the literature, mandelic acid is already extensively employed. In Braasch's report it was shown that the drug is bactericidal in a large percentage of cases of uncomplicated urinary infection being especially effective in bacillary infections. It is helpful as a preliminary to instrumentation or surgical treatment of the urinary tract. In some cases in which the bacteria are not completely eliminated from the urine, there has been repeated reduction in the degree of infection and improvement in subjective symptoms. Further experience has not invalidated the general truth of these claims.

The Council voted therefore, to accept mandelic acid for inclusion in New and Nonofficial Remedies.

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

PAUL NICHOLAS LEECH Secretary

MANDELIC ACID—Phenyl-glycolic acid, alpha-hydroxy alpha-toluic acid, the synthetically prepared racemic (*d,l*) compound of the formula $C_6H_5CH(OH)COOH$.

Actions and Uses—Mandelic acid is a nonmetabolizable substance which when administered by mouth is excreted unchanged in the urine, and if the pH of the urine is kept at 5.5 or less it is rendered bactericidal or bacteriostatic against *Escherichia coli*, *Aerobacter aerogenes*, *Streptococcus faecalis* and organisms of the *Proteus*, *Pseudomonas*, *Alcaligenes*, *Salmonella* and *Shigella* groups. The acidity should be controlled by frequent determinations of the pH . In cases in which the acidity is not reduced to pH 5.5 or less, other acidifying agents such as ammonium chloride, ammonium nitrate or nitrohydrochloric acid may be administered concurrently providing there are no contraindications. The ketogenic diet may also be employed. Fluid intake should be restricted to an amount not exceeding 1,200 cc daily. It is usually neither necessary nor advisable to continue mandelic acid therapy longer than from twelve to fourteen days, as renal irritation may ensue. Nausea, diarrhea, dysuria and hematuria may also occur occasionally, requiring reduction in dosage or interruption of therapy. Mandelic acid should not be administered in the presence of renal insufficiency, as an inadequate concentration is obtained in the urine, renal irritation may result, and serious acidosis may occur from retention of the acid.

Dosage—The usual dosage is 3 Gm four times a day either as the free acid or in the form of the sodium or ammonium salt. An additional acidifying agent is usually required when the sodium salt is employed.

Mandelic acid is prepared by allowing sodium cyanide to react with the sodium bisulfite addition compound of benzaldehyde. The mandelonitrile thus formed is isolated and hydrolyzed to give the impure acid which is separated and purified.

Mandelic acid is a white crystalline compound which gives a colorless clear solution in water, alcohol and alkali. It is odorless and possesses a sharp, salty taste. The solubility is 16 Gm in 100 cc water at 20°C, 53.6 Gm in 100 cc ethyl alcohol at 16.5°C. The melting point of the substance is 118-120°C (microscopic heating stage).

Mandelic acid is slightly unstable, slowly turning yellow when exposed to light, reacts with alkalis and basic substances. A saturated aqueous solution reacts strongly acid to Congo red test paper and slightly acid to cresol red paper.

Dissolve about 0.25 Gm of mandelic acid in 10 cc of water and add two drops of ferric chloride test solution; a bright yellow color is produced.

Dissolve about 0.25 Gm of mandelic acid in 5 cc of water in a test tube; to this solution add 5 cc of concentrated sulfuric acid, agitate the test tube and contents for a few seconds, then add 10 cc of concentrated sulfuric acid and mix contents by a twirling motion; a purple color slowly forms if the test tube is allowed to stand for a few minutes and a strong odor of benzaldehyde is noticed.

The moisture content of mandelic acid should not exceed 0.5 per cent. *d,l* mandelic acid complies with the U.S.P. tests for heavy metals. The U.S.P. XI (Page 471) chloride test for 1 Gm should not exceed the turbidity produced by 0.05 cc of 0.02 normal hydrochloric acid in 50 cc of solution.

The ash from 0.1 Gm *d,l* mandelic acid is negligible. Transfer about 0.1 Gm *d,l* mandelic acid accurately weighed to a beaker, add 25 cc of CO₂ free distilled water and titrate with 0.1 normal sodium hydroxide using phenolphthalein as an indicator; the alkali used is equivalent to not less than 99.3 per cent nor more than 100 per cent mandelic acid (each cubic centimeter of 0.1 normal sodium hydroxide is equivalent to 0.0152 Gm mandelic acid).

Mandelic Acid-Mallinckrodt—A brand of mandelic acid
N N R

Manufactured by Mallinckrodt Chemical Works, St. Louis. No U.S. patent or trademark.

BISMUTH SUBSALICYLATE (See New and Nonofficial Remedies, 1937, p. 133)

Ampoules Bismuth Subsalsicylate 2 grains (0.13 Gm) in Oil 1 cc—A suspension of bismuth subsalsicylate U.S.P. 0.13 Gm Chlorbutanol (chloroform derivative) 0.03 Gm and distilled water 0.10 cc in sufficient olive oil to make 1 cc.

Prepared by Sharp & Dohme, Philadelphia and Baltimore. No U.S. patent or trademark.

Bismuth Subsalsicylate in Oil 2 ounce bottle—Each cubic centimeter contains a suspension of bismuth subsalsicylate U.S.P. 0.13 Gm Chlorbutanol (chloroform derivative) 0.03 Gm and distilled water 0.10 cc in sufficient olive oil to make 1 cc.

Prepared by Sharp & Dohme, Philadelphia and Baltimore. No U.S. patent or trademark.

SULFANILAMIDE-SQUIBB (See THE JOURNAL July 31, 1937, p. 358; Oct. 30, 1937, p. 1456; and Supplement to New and Nonofficial Remedies, 1937, p. 19)

The following dosage form has been accepted:

Sulfanilamide Tablets 7½ grains

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, DECEMBER 11, 1937

THE COUNCIL ON INDUSTRIAL HEALTH

For more than two years the Board of Trustees of the American Medical Association had under consideration the advisability of establishing a council the function of which would be to deal with matters pertaining to occupational diseases and other phases of the subject of industrial health.

A committee of the Section on Dermatology and Syphilology has for several years interested itself in the problems growing out of the widespread incidence of industrial dermatoses, and at the Kansas City session in 1936 a resolution was submitted to the House of Delegates by Dr. A. R. McComas of Missouri, requesting the Board of Trustees to continue and enlarge its study of industrial hygiene and occupational diseases and to provide for active participation in well directed efforts designed to effect better control of occupational disease.

In March 1937 a conference was held in Chicago, which was participated in by the members of the Executive Committee of the Board of Trustees and by a group of distinguished physicians who have given special study to the general subject of industrial hygiene. At the Atlantic City session the Board of Trustees submitted to the House of Delegates the recommendation of this conference, to the effect that a council, to be known as the Council on Industrial Health, be established and maintained by the American Medical Association. This recommendation received the approval of the House of Delegates, and the Board of Trustees has taken steps to establish the Council on Industrial Health and has appointed the following members, all of whom have agreed to serve: Drs. Stanley J. Seeger, Milwaukee, chairman, Harvey Bartle, Philadelphia, Warren F. Draper, Washington, D. C., Leroy U. Gardner, Saranac Lake, N. Y., Morton R. Gibbons, San Francisco, H. H. Kessler, Newark, N. J., A. D. Lazenby, Baltimore, Earl D. Osborne, Buffalo, and C. W. Roberts, Atlanta, Ga.

The organization of the Council on Industrial Health will be perfected at a meeting to be held December 10,

at which will be decided the plans for outlining the nature and the scope of the Council's activities. The creation of the Council on Industrial Health is another indication of the desire of the American Medical Association to do all that it can to promote the art and science of medicine and the betterment of the public health. It is, of course, confidently expected that the medical profession throughout the United States will support the work of the Council to the fullest possible extent.

STRAINS OF MENINGOCOCCI IN THE UNITED STATES

The meningococcus was recognized in 1887 as the cause of epidemic meningitis by Weichselbaum, who first identified this organism as a separate species. As late as 1909 it was still believed that there was no essential difference between individual members of the meningococcus group of organisms. In that year Dopter¹ discovered that some of the meningococci isolated from human beings could be distinguished from the ordinary type of organisms by agglutination reactions. Soon there were found to be a number of different subtypes of meningococci. In 1915 Gordon and Murray examined many strains of meningococci from cases occurring among British soldiers and found that all of them could be classified in four definite types: type I, type II, type III, type IV. For many years the National Institute of Health in Washington has received from persons throughout the United States numerous strains of meningococci. The strains thus received from January 1931 to March 1, 1937, have been typed according to the Gordon and Murray classification and analyzed by Branham and Carlin.² The typing was done by simple agglutination tests; absorption tests were not done, as they were not considered practical for routine purposes.

Meningococcic meningitis in the United States has returned in epidemic proportions about every ten years ever since the first outbreak in Massachusetts in 1899. The year 1931, which was the first year in the period studied by Branham and Carlin, may be considered the end of an epidemic period, and the year 1935 represents a return of epidemic conditions. About 100 strains were typed. During the epidemic years from 1932 to 1934, inclusive, the percentage of type II strains studied at the National Institute of Health rose from 4 in 1931 to 32 in 1932, remained high during the following year, and fell to 13.2 when epidemic conditions returned in 1935. The type II meningococci during the last two epidemic waves in the United States has played an insignificant part during the epidemics of the World War (1918-1919) have

¹ Zinzer, Hans, and Bayne Jones, Stanhope. A Textbook of Bacteriology, 7th ed. New York: D. Appleton Century Company, 1935, page 452.

² Branham, Sara E., and Carlin, Salie A. A Study of Meningococci Recovered in the United States Since 1930. J. Infect. Dis. 1937, 57.

the type II meningococcus was abundant. Type IV during recent years seems to have dropped out of the picture altogether. The percentage of the I-III group of meningococci has greatly increased, and these strains accounted for the epidemics that occurred during the period under investigation. In the first year of the latest epidemic wave (1935) there were received at the institute about an equal number of type I and type III strains and strains that were designated as I-III because they were agglutinated equally well by the two type serums. In 1936 there was a trend in the serologic pattern toward type I and that trend was even more marked among the cultures received during the first two months of 1937.

Of the strains of meningococci typed from active cases in man during this period, 86 per cent fell into the I-III group. Of the total number of strains reported on, only twenty were known to have been isolated from the blood of patients, and sixteen, or 80 per cent of these, fell in the I-III group. Among 451 strains studied forty-two were from meningococcus carriers, and forty-one of these carrier strains were received during the spring of 1936. Among these forty-two carrier strains the type II organism prevailed. The type II meningococcus seems to have been relatively unimportant as a cause of epidemics in the United States during the last ten years.

Thus the meningococcus group of organisms is a heterogeneous group and the prevailing type occurring in epidemics in the United States changes from time to time. These facts may account in part for the difficulty of selecting the strains to be used in the preparation of therapeutic antimeningococcus serum.

HEREDITY AND THE NEUROPATHIC CONSTITUTION

Although there have been numerous inquiries into the incidence of psychoses and other "neuropathic" conditions among the relatives of the mentally defective, statistically valid figures as to frequency have not yet been obtained. According to a recent report,¹ 80 per cent of mental defectives have a positive family history of mental deficiency. This fact, if fact it is, lends support, it is asserted, to the theory that most mental deficiency is due to hereditary factors. In order to be significant, however, it must be controlled by knowledge also of the corresponding familial history of mental deficiency for the normal population. In an attempt to ascertain the frequency of such abnormalities among the relatives of normal persons, the Mental Deficiency Committee of the Royal Medico-Psychological Association devised a questionnaire, which was circulated among the mental hospitals, with the request that it be

filled out by as many of the staff as possible. The form was arranged to insure anonymity. Four hundred and fifteen of 1,500 forms distributed were completed and returned. Of this number of persons who replied, 235 stated that they had one or more relatives with one or more of eleven "neuropathic" abnormalities. This figure corresponds to a frequency of 57 per cent. Although surprisingly high, there are several factors, the report states, disposing to give a falsely low figure: (1) the tendency of nurses with a bad family history to refuse to fill in the forms, (2) the fact that information was not asked about all possible relatives, (3) the fact that the inquiry did not include all conditions which might be considered to be of neuropathic importance.

A second question on which the forms gave some information was whether the so-called degenerative stocks are breeding faster than the more normal. Because of the difficulty in definition of "degenerative," this question may be approached statistically from a number of points of view. Five methods of approach were described in this report, none of which showed any significant difference between the abnormal and the normals. The committee was of the opinion, therefore, that there is no gross difference between the sizes of families in the normal and the abnormal groups.

This report raises several points of considerable interest, some of which have been recently pointed out by Myerson.² As a background for the study of the incidence of mental diseases, large segments of the normal population should be studied for a long time. Such a study cannot be done hurriedly. It involves more than the reading of records and the interviewing of relatives. It may require intensive studies by groups of people working together at least twenty years. Obviously these criteria have not been satisfied by the Mental Deficiency Committee report. In addition, there must be grave question as to the statistical significance of the material contained in the report when based on such a relatively small section of the population, a section moreover the completely representative neuropsychic qualities of which may be open to question. Furthermore, if only 415 out of 1,500 forms were returned, there arises the inevitable problem of not knowing what the other 1,085 forms would have shown had they been returned, and how these would have affected the percentages. This difficulty with the questionnaire and sampling method has been pointed out by numerous statisticians and has been referred to editorially on previous occasions. Thus, although no genuine attempt to extend knowledge should be condemned, it is obvious that the report in question adds but little to the factual information on the relative incidence of neuropathic conditions in the relatives of the normal.

¹ An Inquiry into the Incidence of Neuropathic Conditions in the Relatives of Normal Persons. Report by Mental Deficiency Committee of the Royal Medico-Psychological Association. *J. Ment. Sc.* 83: 247 (May) 1937.

² Myerson, Abraham. Heredity and Mental Disease. *Prev. Med.* 7: 135 (Sept.) 1937.

Current Comment

DEATHS FOLLOWING ELIXIR OF SULFANILAMIDE-MASSENGILL—V

In recent issues, THE JOURNAL has presented the tragic story of ELIXIR of Sulfanilamide-Massengill, particularly in reference to its scientific aspects.¹ Elsewhere in this issue² is the report of the field work and of the investigation of the S. E. Massengill Company by the United States government. The report points out that the number of deaths which have been confirmed is seventy-three (the number confirmed by the American Medical Association headquarters, as brought out in its last report) and that in addition twenty deaths followed administration of the elixir in which the exclusive responsibility of the drug has not yet been determined. The report brings out that the only test made of the elixir was that for flavor. The manufacturing formula given coincides very closely with the observations of the A. M. A. Chemical Laboratory. Of the 240 gallons manufactured, 228 gallons and 2 pints was seized by the federal Food and Drug inspectors. Eleven gallons and 6 pints was dispensed on prescription or over the counter sales. Of the latter quantity, about one half was consumed and caused the deaths, the other half was retrieved before consumption. In this interesting summary it is shown that the S. E. Massengill Company of Bristol, Tenn.-Va., sent out telegrams October 15 to withdraw the product from the market but that they were lamentably obscure as to the reason for withdrawal. The government insisted that a stronger telegram be sent, which was done October 19. The government, it is reported, is preparing citations asking that the S. E. Massengill Company show cause why it should not be subjected to criminal prosecution in the federal courts. In this connection the Secretary of Agriculture points out that in September 1934 and in March 1937 the S. E. Massengill Company was convicted and paid fines for violations of the Food and Drug Act (Notice of Judgment 23228 and Notice of Judgment 27136). Furthermore, the records of the Post Office Department show that in 1929 H. C. Watkins, the Massengill Company chemist who devised the elixir, was in the weight-reducing business in association with the Watkins Laboratories and others who were cited by the solicitor of the Post Office Department to show why a fraud order should not be issued. Mr. H. C. Watkins filed a stipulation with the department agreeing that the sale of the product would be abandoned and not resumed at any future time. The Secretary of Agriculture emphasizes the point made by THE JOURNAL that the fatal elixir was rushed on the market without adequate tests despite previously published reports in the literature showing that diethylene glycol might be dangerous when taken internally. Other points emphasized both by THE JOURNAL and by the government are that the preparation was a semisecret one that the presence of

diethylene glycol was not disclosed and that no warning of danger appeared on the label. At present, the most important factor is remedial legislative action. The recommendations made to Congress were the subject of editorial comment last week. Since then a bill has been introduced in the Senate (S. 3071) by Senator Copeland, embodying essentially the recommendations of the Secretary of Agriculture. Certainly the public deserves protection from incompetent or callous manufacturers of drugs, whether the products are sold directly to the public as "patent medicines" or exploited to the medical profession.

CRYSTALLINE VITAMIN A

One by one the many diverse substances of physiologic significance, e. g., hormones and vitamins, are yielding the secret of their structural configuration to the persistent investigations of the chemist. Not only has the isolation and identification of each substance been of theoretical significance, but the disclosure of chemical constitution has been of tremendous aid in suggesting physiologic functions and relationship, origin, fate, and methods of detecting and determining these compounds. The possible investigations concerned with a hormone or a vitamin invariably increase in number and expand in scope when isolation in pure form and establishment of structure are effected. In some instances, however, final crystallization of the physiologically active agent has eluded the combined efforts of many investigators principally because of the nonavailability of adequate concentrates or the lability of the compound. However, such circumstances, when encountered, have not greatly impaired the progress of studies designed to determine the physiologic significance and function. Indeed, in some instances, when actual isolation in crystalline form has been difficult to achieve, the chemical behavior has become known so thoroughly as to permit surprisingly accurate prediction of the chemical constitution. These comments are particularly applicable to vitamin A. Actual isolation of the vitamin itself in crystalline form appeared desirable chiefly for definite confirmation of the mass of circumstantial evidence pointing to its actual chemical configuration. This isolation has now been attained as a result of a series of noteworthy investigations at Oberlin College.³ By the use of purified solvents, low temperatures and special technical precautions, it has been possible to isolate the vitamin in crystalline form from the liver oils of three different species of fish. Biologic assay indicates that the crystalline preparation has a value of approximately 3,000,000 international units per gram. The molecular weight determination and elementary analyses of the compound correspond to a formula already suggested for the vitamin. This dietary essential which has been known for a quarter of a century has finally been obtained in a quarter probably pure, form. This constitutes another noteworthy achievement in the records of the isolation and identification of biologically important compounds.

¹ Deaths following Elixir of Sulfanilamide-Massengill, editorial J. A. M. A. 109:1367 (Oct. 23), 1454 (Oct. 30). Elixir of Sulfanilamide-Massengill, ibid. 109:1531 (Nov. 6), 1544 (Nov. 20), 1553 (Nov. 27). Deaths following Elixir of Sulfanilamide-Massengill, editorial J. A. M. A. 109:1553 (Nov. 27), 1564 (Dec. 4), 1575 (Dec. 11), 1586 (Dec. 18), 1597 (Dec. 25), 1608 (Jan. 1, 1938).

³ Safeguard Proposed to Govern Distribution of Doses of Vitamin A, editorial J. A. M. A. 109:1911 (Dec. 4), 1937.
¹ Holmes H. N. and Corbett P. E. J. Am. Chem. Soc. 59 (Oct.) 1937.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES NEW HOSPITALS EDUCATION AND PUBLIC HEALTH)

ARIZONA

Annual Registration Due January 1—Every person practicing medicine, surgery or osteopathy in Arizona is required by law to pay annually on or before January 1, to the board of medical examiners, a renewal license fee of \$3. Any licensee who does not renew his license as required above is to be penalized \$1 for each day that he practices without a renewal license, not to exceed \$50. The board of medical examiners is to revoke the license of any licensee who fails to renew his license for three successive years.

CALIFORNIA

Annual Registration Due January 1—Every practitioner of medicine and surgery holding a license to practice in California is required by law to register annually, on or before January 1, with the secretary-treasurer of the board of medical examiners and at that time to pay a fee of \$2. Failure to pay the required fee within sixty days after January 1 works a revocation of a license, and thereafter a license may be reissued only after application and the payment of a \$10 penalty.

Dr Junius Harris Honored—Dr and Mrs Junius B Harris, Sacramento, were presented with a chest of silver at the third annual conference of county secretaries in San Francisco October 2, in appreciation of their efforts in conserving the interests of the medical profession. Dr Harris has served as president of the Sacramento County Medical Society and of the California Medical Association and is now Vice President of the American Medical Association. He also served as a member of the House of Delegates of the American Medical Association in 1929, 1930, 1932 and 1934. Mrs Harris has been active in the work of the Woman's Auxiliary.

Report on Medical Economic Survey—*California and Western Medicine* announces that the "Formal Report on Factual Data" of the California medical-economic survey which was approved at the 1934 annual session of the California Medical Association has been completed. The study aimed to determine among other things, the true incidence of sickness in the state. Paul A. Dodd, Ph.D., directed the study. The 224 page report may be purchased at \$2 a copy. The state association expended more than \$40,000 to defray part of the financial expense of the survey while the Works Progress Administration and the Federal Emergency Relief Administration carried the balance of more than \$55,000. The state department of health cooperated. The study covered 21,000 families including almost 65,000 people in twenty-six representative counties of the state.

Annual Surgical Clinic—Dr John F. Erdmann, formerly professor of surgery, New York Post Graduate Medical School Columbia University, New York, was the guest of the Los Angeles Surgical Society at its annual meeting, December 10-11. Among the speakers at the afternoon sessions were:

Dr Burns S. Chaffee, Long Beach: A Ruptured Appendix That Spontaneously Drained Through the Internal Abdominal Ring and Down the Canal of Nuck.

Dr Albert J. Scholl, Los Angeles: Hemorrhagic Cyst of the Kidney.

Dr Joseph Jellen, Los Angeles: Regional Ileitis.

Dr Albert G. Bower, Los Angeles: The Administration of Sulfanilamide.

Dr Vernon Thompson, Los Angeles: Treatment of Occlusive Vascular Diseases.

Dr Wayland A. Morrison, Los Angeles: Solitary Paratyphoid Lesion of the Large Bowel.

The annual dinner was held December 10, at which Dr Erdmann gave an illustrated address entitled "Curiosities in Surgical Practice."

COLORADO

Midwinter Clinics—The Colorado State Medical Society will present the following guest speakers in clinics and formal addresses in its annual midwinter postgraduate clinics, December 15-17, at the Shurlev-Savoy Hotel, Denver:

Dr Albert J. Brown, Omaha: tumor clinic. Treatment of Diseases of the Stomach.

Dr Herman I. Kretschmer, Chicago: clinic on prostatic obstruction. Tumors of the Kidney.

Dr A. Creme Mitchell, Cincinnati: clinic on nephritis. What I Don't Know About Endocrinology.

Dr Robert D. Schrock, Omaha: fracture clinic. Fractures of the Lower End of the Radius and Ulna.

Dr Don C. Sutton, Chicago: clinic on arteriosclerosis. Obscure Fevers.

Colorado physicians will also present papers and conduct clinics. A stag smoker will be held Wednesday evening and the banquet Friday evening. The woman's auxiliary to the Medical Society of the City and County of Denver is planning entertainment for the visiting ladies.

FLORIDA

Annual Registration Due January 1—Every practitioner of medicine and surgery holding a license to practice in Florida is required by law to register annually on or before January 1, with the secretary of the state board of health, and at that time to pay a fee of \$1. A licensee failing to register annually is liable to a fine of not more than \$50.

Society News—Dr Walter C. Jones, Jr., Miami, was elected president of the Florida East Coast Medical Association at its tenth annual convention, in Hollywood, November 12-13. Drs. Elbert McLaury, Hollywood, and John Randolph Perdue, Miami Beach, were named vice presidents, and Dr. Thomas C. Kenaston, Cocoa, secretary-treasurer. The fall meeting of the Florida Midland Medical Society was addressed in St. Petersburg, October 28, among others by Drs. Thomas C. Maguire, Plant City, on "Congenital Abnormalities of the Intestinal Tract"; Martin H. Stuart, St. Petersburg, "A Palliative Treatment of Acute Mastoiditis," and Harold C. McDowell, Venice, "Bone Graft of the Neck of the Femur."

GEORGIA

State Pediatric Meeting—The fifth annual scientific meeting of the Georgia Pediatric Society was held in Atlanta, December 9, with the following speakers:

Dr. Joseph Brennmann, Chicago: Acute Laryngotracheobronchitis. The Acute Abdomen in Childhood.

Dr. Ralph S. Muckenfuss, New York: Immunization Against Common Infections of Childhood. Virus Infections of the Central Nervous System.

Dr. Priscilla White, Boston: Endocrine Problems in Juvenile Diabetes. Recent Problems in Juvenile Diabetes.

Dr. Paul H. Holinger, Chicago: Bronchial Obstruction in Infancy. Atelectasis and Bronchiectasis.

Dr. Henry Clifford Sauls, Atlanta, president of the Fulton County Medical Society, gave the address of welcome.

ILLINOIS

Number of Insane Patients Doubles in Twenty-Five Years—The number of insane persons in state institutions in Illinois has doubled in the last twenty-five years, according to a report of the state department of public welfare. The commitments have increased 16% per cent during the last five years. At the same time the number of epileptic and feeble-minded persons cared for by the state has increased nearly five times over a twenty-five year period and commitments to penal institutions are 11,578 for 1937 as of October 1 as compared with 3,276 in 1912. The steady increase has been most noticeable during the ten year period between 1927 and October 1 of this year. In 1927 there were 20,540 insane persons committed to institutions in Illinois, and October 1 the total stood at 28,715, in 1912 the number of insane in state institutions was 14,426. In 1912 there were 1,479 feeble-minded and epileptic persons cared for by the state, while in 1927 this number had increased to 4,562 and at the time of the report this year it reached 6,995. Delinquents committed by the state show a smaller increase over the twenty-five year period. In 1912 there were 956 delinquents cared for, in 1927 there were 1,217 and this year the number had decreased to 1,004. The state department of public welfare was caring for 51,275 persons October 1. In 1912 the number was 25,385 and in 1927 15,644.

Chicago

Society News—At a meeting of the Society of Medical History of Chicago, November 30, Drs. Clarence A. Earle, Des Plaines, Ill., discussed "Pioneer Medicine" and William Allen Pusey, Giants of Medicine in Pioneer Kentucky. The Chicago Orthopaedic Society was addressed December 10, among others, by Dr. Ralph K. Ghormley, Rochester, Minn., on "Some Unusual Lesions of Vertebrae."

The Patterson Institute for Cancer Research—A fund of more than \$500,000 has been established for cancer research and investigation, the income of which will be used in Passavant Hospital. The institute will be known as the Patterson Institute for Cancer Research. Miss Edith Patterson, Sterling, Ill., is the donor in memory of her brother, Floyd Elroy Patterson, who died in 1928. Under the terms of the agreement between

Miss Patterson, Northwestern University and the hospital, the building occupied by the Passavant Hospital will be named the Floyd Elroy Patterson Building although the unit will continue to be known as the Passavant Hospital, it was announced. The institute will be organized as a department of the hospital with a yearly appropriation of \$12,000 for treatment and research.

LOUISIANA

Personal—Dr Lucien A Ledoux, New Orleans, has been appointed associate professor of gynecology at Louisiana State University Medical Center, New Orleans, it is reported.

Society News—At a meeting of the Ouachita Parish Medical Society in Monroe, November 4, the speakers were Drs Edgar Hull and Joseph O Weilbaecher Sr, both of New Orleans, their subjects were "Nutritional Factors in Cardiac Failure" and "The New Insulin Therapy in Diabetic Disease, Namely, Protamine Zinc Insulin," respectively.

Annual Renewal Due January 1—Every practitioner of medicine and surgery holding a certificate to practice in Louisiana is required by law to have his certificate renewed annually, on or before January 1, by the secretary-treasurer of the state board of medical examiners and at that time to pay a fee of \$2. The board may by unanimous vote revoke any certificate not renewed.

MAINE

Society News—The Portland Medical Club was addressed October 5 by Dr Roderick L Huntress on "Some Causes of Urgency and Frequency Without Urethral Obstruction."—At a meeting of the Kennebec County Medical Association in Gardiner, October 27, the speakers included Dr Henry H Faxon, Boston, on "Vascular Diseases"—Dr Richard B Cattell, Boston, addressed the Oxford County Medical Association in Bethel, October 26, on "Surgical Diseases of the Colon and Rectum."—At a meeting of the Washington County Medical Society in East Machias, October 8, Dr Laforest J Wright, Bangor, spoke on "The County Society: Its Function and Value to Members", Dr Magnus F Ridlon, Bangor, "Carcinoma of the Uterus," and Ralph W Wakefield, Bar Harbor, malpractice. Dr Wakefield addressed the fall meeting of the York County Medical Society in Kennebunk, October 6, a symposium on obstetrics was also presented by Drs Roland B Moore, Portland, Chester F McGill, Portsmouth, N H, and Thomas A Foster, Portland.

MICHIGAN

New Health Association Officers—Dr Carleton Dean, Charlevoix, director, district health department, Children's Fund of Michigan, was elected president of the Michigan Public Health Association at its seventeenth annual conference in Lansing November 11. He succeeds Dr Jacob D Brook, Grand Rapids, health officer of Kent County, who was named to the board of directors. Dr John L Lavan, health officer of Grand Rapids, was elected vice president and Marjorie Delavan, Lansing, director of the bureau of education state department of health, was made secretary-treasurer.

Occupational Diseases Made Reportable—A law requiring every physician, hospital superintendent or clinic registrar having knowledge of a case of occupational disease to report it within ten days to the state department of health went into effect October 29, according to the state medical journal. The law describes the characteristics of occupational diseases and empowers the state department of health to provide employers with the proper instruction and information to prevent these diseases.

Symposium on Occupational Disease—The Michigan Department of Labor and Industry sponsored a symposium on occupational disease at the Detroit-Leland Hotel Detroit, October 21-22. Speakers included

Dr Anthony J Lanza New York Social Aspect of Occupational Diseases
Dr John T Murphy Toledo Ohio Radiologic Aspects of Silicosis
Philip Drinker Ch E Boston Industrial Dust Hazards and Their Control
Dr J eff C Aul Boston Lead Poisoning
Dr William D McNally Chicago Poisons Under an Occupational Disease Act

Graduate Conferences on Tuberculosis—The Wayne County Medical Society, the Detroit Department of Health and the Detroit Tuberculosis Sanatorium cooperated in the fall graduate conferences which this year were devoted entirely to tuberculosis. The series of lectures and demonstrations held at weekly intervals, opened October 27 with Dr Kendall Limer-

son, New York, as the speaker on "Present Trend of Tuberculosis." Other speakers included

Dr Esmond R Long Philadelphia Importance of Protection of Child and the Young Person Against Tuberculosis
Dr James N Baker Montgomery Ala The Role of the Private Physician in Tuberculosis Case Finding
Dr John B Hawes II Boston, The Care of the Patient After Sanatorium
Dr Don M Griswold Albany N Y, Factors in the Control of Tuberculosis
Dr George G Ornstein New York The Pathogenesis of Pulmonary Tuberculosis from the Physician's Point of View

MINNESOTA

Fined for Selling Contraceptives—Mrs Cecilia Scott pleaded guilty in the district court of Hennepin County at Minneapolis November 22 to a charge of the unlawful sale of contraceptives. She was sentenced to serve sixty days in the Minneapolis Work House or pay a fine of \$75, she paid the fine. Mrs Scott stated that she came to Minneapolis in the spring of 1937 from Kansas City, Mo., that she represented the Smith Laboratory Corporation, and that they had an office at 408 Wesley Temple Building. According to the state board of medical examiners, Mrs Scott did not confine her contacts to the medical profession but went to private homes because of information that she obtained through the daily birth notices in the Minneapolis newspapers. When policemen called on Mrs Scott they were told among other things, that a physical examination could be arranged for them at the office of Arthur Kolling, a chiropractor in Minneapolis. Kolling has no license to practice medicine in Minnesota and already has been convicted of practicing illegally.

NEW YORK

Annual Registration Due January 1—Every practitioner of medicine and surgery in New York is required by law to apply annually, on or before January 1, to the secretary of the board of medical examiners for a certificate of registration on application forms furnished by him, and to pay at that time a fee of \$2. The law authorizes the secretary of the board to permit secretaries of duly incorporated medical societies to act as his representatives, to receive and transmit to him such applications and fees. Practitioners are liable to severe penalties for failing to register and for continuing in practice thereafter.

Staphylococcal Food Poisoning—About forty cases of food poisoning attributed to the eating of chocolate eclairs were recently reported to the state department of health from Newburgh and Orange County. All the eclairs were from a single batch prepared at a local bakery during the night of October 22 and sold October 23. The eclairs were made by the pastry baker without any assistance, but two other persons were in the bakery during the night. One admitted having had a sty which had disappeared two days before. It was found also that a sty developed in another employee of the bakery October 24. The state laboratory reported that staphylococci were found in great numbers in the eclairs.

New York City

Third Harvey Lecture—Dr Cecil K Drinker, professor of physiology, Harvard University School of Public Health, Boston, will deliver the third Harvey Lecture of the current series at the New York Academy of Medicine, December 16. Dr Drinker will speak on "The Functional Significance of the Lymphatic System."

Society News—George R Cowgill, Ph D, New Haven Conn, and Dr Richard Bauer, Vienna Austria, addressed the Medical Society of the County of Kings, November 16 on "Vitamin Requirements and the Clinics" and "Diagnosis of Diseases of the Liver" respectively.—Dr Charles R Stockard, professor of anatomy, Cornell University Medical College, delivered the first and second Joseph Collins Lectures at the New York Academy of Medicine, December 2, on "The Mechanisms Operating the Body as an Integrated Unit" and "Endocrine Changes and Modifications in Emotion and Behavior." A symposium on tumors of childhood was presented at a meeting of the section of pediatric pathology December 9, by Drs Bradley L Coley, George T Pack, Hayes E Martin, William L Watson and Lloyd I Craver.

Dr Levene to Receive Nichols Medal—Dr Phyllis Aaron Theodore Levene, member of the Rockefeller Institute for Medical Research since 1907, will receive the William H Nichols Medal of the New York Section of the American Chemical Society at a meeting March 12, 1939. It was recently announced Dr Levene is honored for his study of the configurational relationships of the simpler optically active com-

compounds" He is the author of papers on proteins, nucleins, carbohydrates, lipids and problems of stereochemistry and of two monographs entitled "Hexosamines and Mucoproteins" and "Nucleic Acids" Dr Levene was graduated in medicine in Russia in 1891 and came to America in 1893 After a period of practicing medicine, he began research in biologic chemistry and in the next few years was associate in chemistry at the New York Pathological Institute

Pharmacologist Honored—Friends, students and alumni of New York University College of Medicine presented to the college an oil portrait of Dr George B Wallace, professor of pharmacology, on his completion of thirty-six years of teaching November 15 Dr Alfred N Richards, professor of pharmacology, University of Pennsylvania School of Medicine, Philadelphia, made the presentation speech and the portrait was accepted by Dr Currier L McEwen, dean of the college Dr Wallace, who is 63 years old graduated from the University of Michigan Department of Medicine and Surgery Ann Arbor, in 1897 He is a member of many scientific societies, a founder of several and has served as president of the American Society of Pharmacology and Experimental Therapeutics, the Harvey Society and the Society of Experimental Biology and Medicine He is chairman of the committee on pharmacology and drugs of the 1939 World's Fair

Hospital News—The Max and Flora Einhorn Memorial Building of the Lenox Hill Hospital was dedicated October 22 The building, erected at a cost of \$400,000, is the gift of Dr Einhorn, who has been associated with the hospital for many years It contains a twenty-five bed pavilion, an auditorium, a roof garden, a hydrotherapy department and a swimming pool—The new Central Nurses' Residence on Welfare Island, which will make possible the evacuation of unsuitable quarters at several city institutions, has recently been completed Built on a loan and grant agreement with the Public Works Administration at a cost of \$1,500,000 the new residence will provide 678 rooms The department of hospitals recently announced that a residence with 669 rooms is being completed at Kings County Hospital, Brooklyn Homes for nurses have also been built at Greenpoint, Kingston Avenue and Queens General hospitals, and extensions have been added at other hospitals There are now 2189 rooms in which nurses may live under satisfactory conditions, the announcement stated—A new building for the Bronx Eye and Ear Infirmary, recently completed at a cost of \$500,000, was opened without ceremony October 15

NORTH CAROLINA

Annual Registration Due January 1—Every practitioner of medicine and surgery holding a license to practice in North Dakota is required by law to register annually on or before January 1, with the secretary-treasurer of the board of medical examiners, and at that time to pay a fee of \$5 if a resident of North Dakota or \$2 if a nonresident A practitioner may not lawfully practice if he has not registered If he does so his license may be revoked and can be reinstated on the payment of unpaid fees and 50 cents for each month of default

Special Society Meetings—The North Carolina Eye, Ear, Nose and Throat Society held its annual meeting in Charlotte November 20 with the following guest speakers Drs Leroy A Schall Boston on Laryngectomy—Its Place in the Treatment of Cancer of the Larynx Wilfred E Fry Philadelphia Ocular Pathology Associated with Increased Intracranial Tension and Gabriel Tucker, Philadelphia, Gastroscopy for Diagnosis and Foreign Body Removal—At a quarterly meeting of the North Carolina Neuropsychiatric Society in Asheville October 29, Dr David C Wilson Charlottesville, Va discussed a case of neuroblastoma with Hutchinson's syndrome and Dr S Spafford Ackerly Louisville Ky a case of absence of corpus callosum confused with psychopathic personality Dr James K Hall, Richmond delivered an address in the evening on Psychiatry in Retrospect and Prospect—The North Carolina Radiological Society met in Raleigh November 11 with Dr Frank E Adair, New York as guest speaker at an evening banquet with the Wake County Medical Society on Radiation and Surgical Treatment of Breast Cancer

OKLAHOMA

Personal—Dr James A Land Hobart has been appointed medical superintendent of the Western Oklahoma Tuberculosis Sanatorium, Clinton, to succeed Dr Will C Wait who will enter practice in McAlester—Dr Shade D Neely Muskogee, has been appointed health superintendent of Muskogee County to succeed Dr Charles E White, Muskogee, and Dr Gappa M Rushing, Durant, in Bryan County to succeed Dr Henry B Huston Choctaw—Dr George W Baker, Walters, has

been appointed health superintendent of Cotton County and Dr Jessie M Harris, Wilburton of Latimer County

Society News—At a meeting of the Okmulgee-Okfuskee County Medical Society, Henryetta, October 25 the speakers all of Tulsa, were Drs Morris B Lhevine, "Diagnosis and Treatment of Carcinoma of the Breast", Andre B Carney, "Surgical Procedures Following Irradiation in Carcinoma of the Breast" and Russell C Pigford, "Legislative Measures Affecting the Medical Profession in Oklahoma"—Dr Martin R Beyer, Oklahoma City, addressed the Tulsa County Medical Society, Tulsa, November 8, on undulant fever

PENNSYLVANIA

Personal—Dr Robert C Hughes, Paoli, was elected coroner of Chester County at the recent election—Dr Dale E Cary, Lancaster, was elected mayor of the town—Dr Horace V Pike retired November 15 as clinical director of the Danville State Hospital after eighteen years as a member of the staff

Annual Registration Due January 1—Every practitioner of medicine and surgery holding a license to practice in Pennsylvania is required by law to register annually, on or before January 1, with the board of medical education and licensure in the department of public instruction, and to pay a fee of \$1 or such fee as may be fixed by the department of public instruction A practitioner who fails to register and who continues to practice is liable to a fine of from \$10 to \$100

Philadelphia

Society News—Dr Seth A Brumm, among others, addressed the Pennsylvania State Physical Therapy Association, November 18, on "Electrocoagulation of Tonsils"—Dr Wilhelm C Hueper, Wilmington, Del, addressed the Philadelphia Urological Society, November 22, on "Experimental Production of Bladder Tumors in Animals"—Dr Edward D Churchill, Boston, delivered the Mutter Lecture of the College of Physicians of Philadelphia, December 1, on "The Pathology and Surgery of Bronchiectasis"—Dr Nathaniel S Yawger, among others, addressed the Philadelphia Neurological Society, November 19, on "Marihuana Our New Addiction"

Symposium on Biophysics—The American Institute of Physics in cooperation with the Eldridge Reeves Johnson Foundation for Medical Physics at the University of Pennsylvania sponsored a symposium on biophysics November 4-6 Among those who appeared on the program were

Detlev W Bronk Ph D director of the Johnson Foundation The Relation of Physics to the Biological Sciences
Edmund Newton Harvey Ph D Princeton N J The Physical Properties of Protoplasm
Dr Herbert S Gasser New York Electrical Signs of Biological Activities
Wendell M Stanley Ph D Princeton N J The Biophysics and Biochemistry of Viruses
Wallace O Fenn Ph D Rochester N Y The Mechanics of Muscular Contraction

Irving Langmuir, Ph D, director of research, General Electric Company, Schenectady, delivered the Johnson Foundation Lectures November 4 and 5, on "Monolayers and Multilayers and Their Applications to Biological Problems"

Pittsburgh

"Scientific Day" at Montefiore Hospital—Dr Irving Sherwood Wright New York, was the guest speaker at the annual Scientific Day of Montefiore Hospital, November 20, addressing an evening meeting on "A Critical Analysis of Recent Advances in the Study of Vascular Disease" In the morning the department of ophthalmology gave a demonstration of eyegrounds in arteriosclerosis and hypertension followed by discussions as follows Drs Verner B Callomon, on Bronchial Tumor with Atelectasis Meyer A Rosenbloom Sarcomatosis of Stomach with Metastasis to the Heart, Yale D Koskoff "Ligation of Carotid Artery for Intracranial Bruit," and Harry I Miller, Peripheral Vascular Disease"

SOUTH CAROLINA

Society News—Drs Jefferson C Pennington, Nashville, Tenn and Edgar G Ballenger, Atlanta, Ga, were the guest speakers at the annual meeting of the South Carolina Urological Association in Columbia, October 13, on Management of Calculi in the Upper Urinary Tract and Management of Tumors of the Bladder, Both Benign and Malignant respectively—Dr Irvin Abell, Louisville, Ky, President-Elect of the American Medical Association was the guest of the Columbia Medical Society, November 8, speaking on "The Relation of Diabetes to Surgery" Dr Foster M Routh discussed "The

Leukopenic Index in Food Allergy"—Dr Joseph D. Guess, Greenville, addressed the Anderson County Medical Society, October 13, on "Problems in the Management of Labor."

TENNESSEE

Personal—Dr Monroe F. Brown, Fayetteville, has succeeded Dr Frank L. Roberts as health officer of Gibson County with headquarters in Trenton. Dr Roberts is now professor of preventive medicine at the University of Tennessee College of Medicine, Memphis.

Nobel Prize Winner to Give Flexner Lectures—Dr Albert Szent-Gyorgyi, professor of medical chemistry in the Royal Hungarian Franz Joseph University, Szeged, Hungary, who received the Nobel Prize in Medicine for 1937, has been chosen to give the Flexner Lectures at Vanderbilt University School of Medicine, Nashville, for the session of 1938-1939.

Society News—At a meeting of the Dyer, Lake and Crockett Counties Medical Society in Dyersburg, November 3, the speakers were Drs Robert Lyle Motley, Memphis, on "Treatment of Cardiac Decompensation and Edema," Duane M. Carr, Memphis, "Pneumonia," and William P. Watson, Dyersburg, "Accidents During Labor."—A symposium on gallbladder disease was presented before the Memphis and Shelby County Medical Society, Memphis, October 5, by Drs Henry G. Rudner, Joseph A. Crisler Jr and Lucius C. Sanders. Drs W. Likely Simpson and William S. Anderson, Memphis, addressed the society, October 19, on "Foreign Bodies in the Air and Food Passages" and "Indications for Hysterectomy and Radium in Uterine Fibroids" respectively.

University News—Dr Harry A. Davis, instructor in pathology, George Washington University School of Medicine, Washington, D. C., is serving as acting associate professor of pathology at the University of Tennessee College of Medicine, Memphis, in the place of Dr Walter W. Brandes, who is on leave of absence because of illness. William R. Amberson, Ph.D., recently resigned as head of the department of physiology to become professor of physiology at the University of Maryland School of Medicine, Baltimore. His successor has not been appointed. Dietrich C. Smith, Ph.D., instructor in physiology, also went to Maryland as associate professor.

TEXAS

Annual Registration Due January 1—Every practitioner of medicine and surgery holding a license to practice in Texas is required by law to register annually on or before January 1, with the state board of medical examiners, and at that time to pay a fee of \$2. If a practitioner fails to renew his registration within sixty days after January 1, his license is suspended.

Society News—Drs Henry G. Poncher and Arthur H. Parmelee, Chicago, were the guest speakers at a meeting of the Texas Pediatric Society in Dallas, October 23. Dr Poncher spoke on "Problems in Nutrition—Vitamins" and "Upper Respiratory Infections" and Dr Parmelee on "Congenital Syphilis" and "Conditions in the New-Born."—Drs Henry M. Winans and Robert F. Short Jr, Dallas, addressed the Grayson County Medical Society in Sherman, October 12, on "Diagnosis of Upper Quadrant Lesions" and "Surgery of Upper Quadrant Lesions," respectively. Dr Louis F. Knoepf Beaumont, addressed the Hardin-Tyler Counties Medical Society, October 12, in Kountze on "Surgical Lesions in Tuberculosis."—Dr French K. Hansel, St. Louis, addressed the Dallas Academy of Ophthalmology and Otolaryngology in October on "Etiology and Treatment of Rhinitis."—Dr Edward P. Leeper, Dallas, discussed "Heart Disease Due to Vitamin Deficiency" before the Dallas Heart Association, November 1.—Drs J. C. Alexander and Milford O. Rouse, Dallas, addressed the Ellis County Medical Society, Waxahatchie, October 13, on "Sulfanilamide as a Urinary Antiseptic" and "Diarrheas" respectively.—Drs George D. Mahon and Charles L. Martin, Dallas, addressed the Potter County Medical Society, Amarillo, October 11, on "Resection of the Right Half of the Colon" and "Treatment of Advanced Cancer" respectively.

WASHINGTON

Society News—At a meeting of the Washington State Obstetrical Association in Spokane, October 2, there were discussions of "Induction of Labor," "Analgesia and Anesthesia" and "What Is of Most Importance in Obstetrics Today." Dr Henry H. Skinner, Yakima, is president of the association and Dr Philip C. Kile, Tacoma, secretary.—Dr Henry S. Atwood, Yakima, addressed the Yakima Valley Medical Society

in Yakima, October 11, on "Spinal Anesthesia."—Drs I. G. Cheetham and Leo J. Meinberg, Portland, Ore., addressed the Cowitz County Medical Society, Longview, October 13, on "Sulfanilamide treatment of gonorrhea."—Dr Frederick Lenore, Seattle, addressed the Pierce County Medical Society, Tacoma, October 12, on "Insulin Shock in Treatment of Psycho."—At the first fall meeting of the Walla Walla Valley Medical Society, Walla Walla, October 14, Drs Frank B. Kistner and Robert L. Benson, Portland, discussed "Asthma and Hay Fever as Related to Parasinal Sinus Infection."

WEST VIRGINIA

Public Health Meeting—Dr Reece M. Pedcord Wheeling, was elected president of the West Virginia Public Health Association at its annual meeting in Charleston, November 7. Drs Charles E. Watkins, Fayetteville, and William W. Hunt, Beckley, were elected vice presidents and Dr Thomas W. Hale, Charleston, secretary. Among the guest speakers at the meeting were Drs Reginald M. Atwater, secretary of the American Public Health Association, New York, on "Today's Trends in Public Health," Halbert L. Dunn, chief statistician for vital statistics of the Bureau of the Census, Washington, D. C., "Complete Birth Registration," and Anthony J. Lanzi, New York, "The New Day in Disease Control and Prevention Through Industrial Hygiene."

WISCONSIN

Society News—Speakers before the Milwaukee Society of Clinical Surgery, November 23, were Drs Edmund W. Schacht, Racine, on "Carcinoma of the Scrotum" and Charles B. Huggins, Chicago, "What Is the Function of the Arterial Supply of the Liver?"—Dr Oscar A. Sander, Milwaukee, addressed the University of Wisconsin Medical Society, Madison, November 23, on "Silicosis."—Dr Roy P. Potter, Marshfield, addressed the Columbia-Marquette-Adams County Medical Society, Adams, November 9, on "Diseases of the Chest."

District Meeting—The annual meeting of the Fifth District of the state medical society was held in Two Rivers, October 14, with the following guest speakers: Drs Nelson M. Barker, Rochester, Minn., on hypertension; Harry L. Smith, Rochester, diagnosis and treatment of carotid sinus syncope; William S. Middleton, Madison, newer therapy of lobar pneumonia; and David A. Cleveland, Milwaukee, spinal and cerebral injuries. Dr James C. Sargent, Milwaukee, president of the state medical society, discussed society plans for the coming year.

Committee to Study Sickness Care—At the recent annual meeting of the Medical Society of Wisconsin a special committee was appointed to investigate the adequacy of sickness care in the state. Dr Raymond G. Arveson, Frederic, is chairman and the other members are Drs Henry J. Gramling and Robert W. Blumenthal, Milwaukee, Joe Newton Sisk, Madison, and Henry H. Christofferson, Colby. It is planned that the committee shall hold hearings in various parts of the state to receive complaints, opinions and recommendations of all persons in certain key centers who are familiar with the broad problem of sickness care.

PUERTO RICO

The Annual Medical Meeting—The thirty-fourth annual session of the Puerto Rico Medical Association will be held at the association headquarters in Santurce, December 17-19. Special guests will be Drs Ramon Castroviejo and Dana Winslow Atchley, New York, who will conduct clinics and give addresses on "The Present Status of Ophthalmic Surgery" and "Nephrosis and the Nephrotic Syndrome" respectively. Among others on the program will be:

Dr Manuel E. Pujadas Diaz, Santurce, Celiac Disease.
Dr Oscar G. Costa Mandry, Santurce, Study of Food Infections in Puerto Rico.
Dr Rafael Lopez Nussa, Santurce, Surgery of the Sympathetic.
Dr A. Rodriguez Ollerios, Madrid, Spain, Gastroscopy.
Dr Luis J. and Ricardo Fernandez, San Juan, Treatment of Gonococcal Ophthalmia with Sulfanilamide.
Dr Ezequiel Martinez Rivera, Rio Piedras, Venereal Disease from Public Health Point of View.
Dr Carlos Gonzalez Mayaguez, Therapeutic Use of Sulfanilamide in Infections of Streptococcal Origin.

A feature of the meeting will be three showings of the film "Diagnosis of Syphilis" prepared by the American Medical Association and the U. S. Public Health Service. The latter sessions will be held in the afternoons and evenings. The program will be devoted to clinics at various hospitals.

GENERAL

New Journal of Neurophysiology—Announcement is made of the forthcoming publication of the *Journal of Neurophysiology* under an editorial board consisting of Drs Joannes G Dusser de Barenne and John F Fulton, Sterling professors of physiology, Yale University School of Medicine, New Haven, Conn., and Ralph W Gerard, associate professor of physiology, University of Chicago. The aim of the new journal is to serve as a channel for prompt publication of original work bearing on the functions of the nervous system, peripheral and central. The publisher is Charles C Thomas, Springfield Ill.

Y M C A to Cooperate in Syphilis Campaign—The National Council of the Young Men's Christian Association has issued a bulletin urging local units to cooperate with physicians and health officials in the campaign against syphilis. The local units are urged to begin at once to (1) investigate local conditions, the prevalence of the disease and available treatment; (2) appoint committees to consider effective ways and means of aiding local medical and public health authorities; (3) hold social hygiene meetings at which syphilis is the subject for discussion; and (4) arrange with physicians for the taking of Wassermann tests in Y M C A's where practicable. It is estimated that 75 per cent of the association's members are between 11 and 30 years of age, the age group in which the public health service reports that more than half the primary syphilitic infections occur.

Conference on Maternal and Child Welfare—Miss Katharine F Lenroot, chief of the Children's Bureau, U S Department of Labor, has called a conference on "Better Care for Mothers and Babies" to be held in Washington, D C, January 17-18. A planning committee for the conference has been appointed with Mrs J K Pettengill, Detroit, president of the National Congress of Parents and Teachers, as chairman, Dr Fred L Adair, Chicago, chairman of the American Committee on Maternal Welfare, as vice chairman and Mrs Nathan Straus, New York, representing the National Council of Jewish Women, as secretary. The planning committee will represent numerous organizations in the field of health and welfare. Plans for the conference grew out of findings presented to the Children's Bureau by its advisory committee on maternal care, of which Dr Adair is chairman, the announcement stated.

Advisory Committee on Pneumonia—An advisory committee, recently appointed by Dr Thomas Parran, surgeon general, U S Public Health Service, to plan a program for pneumonia control on a national scale, held its first meeting November 12, in Washington. Members of the committee are:

Dr Donald B Armstrong, third vice president Metropolitan Life Insurance Company, New York
Dr David P Barr, Busch professor of medicine Washington University School of Medicine St Louis
Dr Russell L Cecil, professor of clinical medicine Cornell University Medical School New York
Dr Lloyd D Felton, associate in pathology and bacteriology Johns Hopkins University School of Medicine Baltimore
Dr Alfred Friedlander, dean and professor of medicine University of Cincinnati College of Medicine
Dr Roderick Heffron, Commonwealth Fund New York
Dr Ernest E Irons, clinical professor of medicine Rush Medical College Chicago
Dr Roger I Lee, consultant in internal medicine Boston
Dr George H Ramsey, assistant commissioner for preventable diseases State Department of Health Albany N Y

National Foundation for Infantile Paralysis—President Roosevelt announced November 24 appointment of thirty-four citizens of various parts of the United States to serve as trustees of the new National Foundation for Infantile Paralysis now in process of formation. According to a statement by the President when he announced the new foundation recently, its general purpose will be to lead direct and unify the fight on every phase of this sickness. "It is hoped that a fund of from \$7,000,000 to \$10,000,000 will be raised in the next five years. With this the foundation will make every effort to ensure that every responsible research agency in this country is adequately financed to carry on investigations into the cause of infantile paralysis and the methods by which it may be prevented. It also aims to develop means of enabling those already crippled by the disease to become economically independent in their own communities. The first task of the foundation will be to arrange the fifth annual 'birthday balls' to be held January 29 in honor of the President's birthday which is January 30. This year all funds from the celebration will be given to the new foundation instead of being divided as heretofore between the Georgia Warm Springs Foundation and local communities. The newly appointed trustees are: Cornelius A Bliss, John S Burke, Carle C Conway, James V Forrestal, S Parker Gilbert, W Averell Harriman, Jeremiah

Milbank, Keith Morgan, Thomas E Murray Jr, Basil O'Connor, Edward Stettinius Jr, Thomas J Watson and Clarence Woolley, all of New York, George E Allen, Commissioner of the District of Columbia, Robert V Fleming, Washington, James F Bell, Minneapolis, William L Clayton, Houston, Texas, Robert H Colley, Philadelphia, Harvey C Couch, Pine Bluff, Ark., Walter J Cummings, Marshall Field and Walter P Murphy, Chicago, Fred J Fisher, Detroit, Edsel B Ford, Dearborn, Mich., Elton Hoyt 2d, Cleveland, William F Humphrey, San Francisco, John R Macomber, Boston, Leighton McCarthy, Toronto, Robert E McMath, Bethlehem, Pa., Carroll B Merriam, Topeka, Kan., Charles E Perkins, Santa Barbara, Calif., George Rand Buffalo, Robert W Woodruff, Atlanta, Ga., and S Clay Williams, Winston-Salem N C.

FOREIGN

Typhoid in London Suburb—The *New York Times* reported November 22 that 137 cases of typhoid had occurred in the preceding fortnight in Croydon, a suburb of London, said to have modern water, drainage and health services. Seven deaths had occurred up to November 20. Tests showed that Croydon's water services had "the highest standard of bacterial purity," the *Times* reported.

CORRECTIONS

International Unit for Estrone—On page 1865 of the December 4 issue of *THE JOURNAL* in the article by R T Frank and others, the international unit for estrone (theelin, "ketohydroxyestrin") should have been given as 0.1 microgram instead of 1 microgram.

Duration of Immunity Against Diphtheria—In *THE JOURNAL*, November 20, page 1684, in the first column, second line following the word "negative" the following sentence should have appeared in the discussion by Dr M Bernard Brahdry of the paper by Dr William H Park: "For the results with precipitated toxoid I am going to present data obtained by Dr O'Brien in a group of infants who had no previous injection of antigen."

Government Services

Examination for Appointment in the Navy

Announcement is made of an examination for appointment as lieutenant (junior grade) in the medical corps of the U S Navy to be held at all naval hospitals in the United States and at the Naval Medical School, Washington, D C, beginning May 16, 1938. Candidates must be between 21 and 32 years old at the time of appointment, must be graduates of class A medical schools and must have completed an internship of one year in a hospital accredited for interns by the American Medical Association and the American College of Surgeons. Those who are interested should write to the Surgeon General, U S Navy Bureau of Medicine and Surgery, Navy Department, Washington, D C for further information concerning the examination and the procedure to follow for appearance before the examining boards.

Biochemist Wanted for Research on Syphilis

The U S Civil Service Commission announces an open competitive examination for the position of associate biochemist (syphilis research) at a salary of \$3,200 a year for a vacancy in the Syphilis Research Center, Johns Hopkins Hospital, Baltimore. The work consists of investigative or research work in antibody chemistry, pollen chemistry, the chemistry of the arsenamines or related problems. Candidates must have completed a four year college course with major study in chemistry or chemical engineering. In addition they must have had at least three years of experience or postgraduate training or a combination of these at least one year, in active investigations of the biochemistry of proteins. Applications must be filed with the U S Civil Service Commission at Washington D C before December 28. The closing date is December 31 for the states of Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington and Wyoming.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Nov. 13, 1937

The Growth of Social Services

In an address to the Society of Arts, the chairman, Lord Amulree, said that year after year social legislation advanced and new means were devised for mitigating the hardships which would otherwise be felt by some members of the community. The aggregate public expenditure on education, housing, old age pensions, health insurance, unemployment insurance, unemployment assistance, public assistance or poor relief was annually about \$1,500,000,000. In addition, \$460,000,000 was collected by way of contributions from employers and employed persons. Unless some catastrophe occurred that would arrest all progress, social legislation was likely to increase. At present emphasis was being placed on physical fitness, and there was increased interest in the subject of nutrition. There was a source from which might spring numerous projects of social amelioration, such as the state subsidization of games and sports and possibly artificial cheapening of food. Concern about the birth rate might well give an impetus to the movement in favor of family allowances and the subsidizing of wages.

Some hoped that education would bring about such a standard of social behavior that all men would give their best without the stimulus of material reward or the fear of hardship. Even though that hope might be justified, it was doubtful whether such progress would keep pace with the rapid development of the social services. If not, we might be faced with serious economic and social difficulties. The problems of population might in the near future be not only quantitative. Vistas were opened which were not always pleasant. For example, there was the possibility of compulsory training, restriction of choice of employment and regimentation and control in other directions where at present we shrink from it. Would the benefit of the material advantages we desired to confer be outweighed by the price to be paid in the sacrifice of freedom?

Decrease in Blindness in Children

A bill to help the blind by reducing from 50 to 40 the age at which they become eligible for old age pensions was unanimously given a second reading in the House of Commons. The minister of health said that there were 78,000 registered blind persons in Great Britain. In consequence of increased knowledge of the causes of blindness which operated at birth or in early years and the preventive steps taken the age at which blindness occurred was becoming later. There had been a substantial fall in the numbers of blind children. Those between the ages of 5 and 16 had fallen since 1925 from 3,104 to 1,916, a decrease of more than 38 per cent. It was not practicable to train a blind person after 40 for a new occupation. This was the reason for choosing that age in the bill. The only criticism made in the debate was that still more should be done for the blind. A medical member Sir Francis Edward Fremantle complained that no similar provision had been made for the deaf whose case was almost as tragic as that of the blind. He also objected to extending a pension on a flat rate according to age and regardless of disability. The need of a blind person should be assessed and help given in a similar way to that followed in the case of ex-service men.

A Relentless War on Rheumatic Disease

In an address before the Empire Rheumatism Council Lord Horder said that the problem of rheumatism had been largely neglected from the aspect of scientific investigation and control. The reasons were not obscure. The rheumatism of the

not dramatic, they were not directly lethal, and they were specific in their causation. This very lack of a specific cause had been a potent factor in delaying thorough classification and research, a factor that was absent in such diseases as tuberculosis. It had been known for a long time that the causation of rheumatism was complex, and one after another a number of definite and important causative elements had been brought to light. We were now ready to advance systematically, both in the segregation of the different types of the disease and also in following the different indications for treatment. Since 1922, when the Ministry of Health began to reconnoiter the entrenched positions of the invading enemy, there had been increasing progress in organizing an effective attack on them. The Empire Rheumatism Council formed last year, had already organized the scientific and administrative resources of the home country and the dominions for a relentless war on rheumatic disease.

The stresses and strains of modern life had greatly increased more and more people were subjected to the bombardment of the din of the factory and of the city and to long periods of travel, often under conditions of overcrowding and jolting. The meals of thousands were hurried and defective in quantity or quality or both. A proper amount of physical exercise became more and more difficult for large masses of the people. Industry imposed on many a constant routine of small and frequently repeated movements which called for the overuse of a few muscles and the neglect of all the rest. These were the predisposing and, at times, even the determining causes of rheumatic diseases.

THE EXTENT OF THE SUFFERING

A Ministry of Health survey in 1922 showed that rheumatic disease was probably responsible for 16 per cent of the total industrial morbidity in this country and that during a year 372,600 insured persons sought medical advice for some form of rheumatic disease. The highest incidence was among metal workers, transport workers, mine workers, building workers and clerical workers, in that order. To that estimate of 372,600 insured persons had to be added those outside the insured class. They were considerable, but no basis existed for an accurate estimate. In the insured the annual monetary loss involved amounted to \$85,000,000.

Rheumatism was not often directly lethal, but in rheumatic fever and in cardiac rheumatism there was a killing process second to none in the country. A Ministry of Health report for 1924 stated that "organic disease of the heart is for the most part rheumatic in origin and organic heart disease is the cause of over one third of all deaths."

A LONG TASK

The Empire Rheumatism Council proposed a plan of coordinated research into the causative factors and treatment of all the disease in the rheumatic group. Discovery of the cause would mean not merely cure but—what is more important—prevention. But the probability must be faced that the research might prove a long one. It was planned for a seven year term. All the existing treatments would be investigated immediately, and any new ones brought to notice. Problems of infection, of biochemistry, of diet and of living and working conditions would be probed. The investigations would cover the whole area of the British Empire with its differences of climate and of habits. Also cooperation would be extended to all foreign effort. In therapeutic results could be hoped for in a short time. After arrival the standardization of the most efficient and the most practical treatment the next step would be to make it available to all classes and to see that it was applied in the early stages. In a sentence it was a ruthless war that was being planned against fellow men but against a savage enemy of the race.

Sir Kinsley Wood, minister of health, has laid the foundation stone in London of an arthritis unit, the first of its kind in this country, which has been established by the Empire Rheumatism Council. He said that one sixth of our industrial invalidity was due to rheumatism. The unit marked a new step forward. It would provide beds for research in the early stages of the disease as well as prolonged investigation by a team of workers.

Research in Immunology

In the annual report of the London School of Hygiene and Tropical Medicine it is stated that an important advance has been made by joint researches in the departments of bacteriology and biochemistry. Chemical fractions which appear to have effective immunizing powers have been isolated from the organisms of typhoid, whooping cough and cholera and from certain strains of hemolytic streptococci. A point has been reached where practical application of the results obtained with some of these organisms is within view. The work appears to be of the utmost importance and likely to give a new direction to practice in relation to the whole group of infectious diseases.

PARIS

(From Our Regular Correspondent)

Nov 6, 1937

French Gynecologic and Obstetric Congress

The tenth Gynecologic and Obstetric Congress was held October 1-2 in Paris, the president being Professor Mocquot. The three subjects chosen for discussion were medical and surgical treatment of pruritus vulvae, uteroplacental apoplexy, and treatment of incontinence and of vesicovaginal fistula.

The first paper was by Vayssiere of Marseilles on the etiology and treatment of pruritus vulvae. He said that from 8 to 10 per cent of all patients who applied for treatment at gynecologic dispensaries desired relief for this condition. Among the local causes, leukorrheal discharge was the most frequent. The pruritus was more marked during menstruation and pregnancy. Hormonal factors, such as estrogenic insufficiency, also must be searched for in the etiology. Local treatment of the cervicovaginal infection must be governed by the pH of the secretions, with acetic or lactic acid if they are too alkaline and vice versa. A 1:2,000 solution of silver nitrate is efficacious. A Trichomonas infection is best treated by acetarsone. Radiotherapy is to be recommended for cases resisting all other treatment. If there is evidence of hormone insufficiency, relatively large doses, from 3,000 to 50,000 units a week, should be given, of estradiol benzoate in oil, subcutaneously. Cotte of Lyons pointed out that surgical treatment was a last resort after all nonoperative methods had been unsuccessful. Minor methods include local injections of a 1:400 solution of quinine and urea hydrochloride, of 60 to 90 per cent alcohol and of radioactive preparations. Presacral nerve resection had given good results in ten of seventeen cases; four were partly successful and three were failures. This operation is indicated only when every other method has failed to give relief. In the discussion, Labhardt of Switzerland stated that pruritus was a symptom in inflammatory disorders of the vulva, in psychoneuroses and in vulvar leukoplakia, owing as a rule to ovarian dysfunction. The leukoplakias responded to injections of estrogen, if relatively large doses were given. Kreis of Strasbourg emphasized the necessity of a search for psychoneuroses in the etiology. Jeanneney of Bordeaux said that the choice of neutralizing solutions and antiseptics to be employed depends on the results of the chemical and bacteriologic examination of the vaginal secretions. Search should be made for diabetes, hyperglycemia, high blood urea content and syphilis next for evidences of ovarian dysfunction, and finally for disturbances of the sympathetic nervous system. Brocq and Desrous of Paris reported a case successfully treated by vulvectomy after every other method had been tried.

The second subject for discussion was uteroplacental apoplexy. Professor Couvelaire pointed out that the subject included not only retroplacental hematoma and resultant hemorrhage but also bleeding into the uterine wall, perhaps extending to all the internal genitalia and other viscera. The pathogenesis is not clear. It was thought to be related to nephritis and hypertension in multiparas beyond the age of 30, but it has been found that it is not dependent on vascular lesions or hypertension. The former play a part during pregnancy and then only the capillaries are involved. Experimentally, these accidents appear to take place in women previously sensitized to various antigens, which makes them resemble the visceral infarcts by intolerance shock as described by Gregoire and Duval. The ovum does not take any part because the same phenomena can be produced in nonpregnant animals.

The treatment was the subject of a paper by Weymeersch and Snoeck of Belgium. The incidence of uteroplacental apoplexy varies from 0.09 to 1.06 per cent according to various reports. The obstetric methods of treatment aim to empty the uterus as rapidly as possible. Surgical intervention includes conservative cesarean section (high or low) alone or followed by vaginal hysterectomy and abdominal hysterectomy. Obstetric treatment was employed in 853 of 1,080 cases, with a maternal mortality of 6.58 per cent and a fetal mortality of 61.3 per cent. Surgical treatment in 227 cases entailed a maternal mortality of 21 per cent and a fetal mortality of 70.7 per cent.

The severity and extent of the hemorrhages are not necessarily a criterion of the gravity of the case in deciding which of the three operative methods is to be selected. The time factor is the most important one. If the uterus is emptied during the first ten hours after appearance of the symptoms, the maternal mortality is 27 per cent. It rises to 40 per cent if the ten hour period has been passed. Many obstetricians, in order to judge the functional value of the uterus, inject solution of posterior pituitary intravenously following cesarean section. If the uterus contracts well, so that no late hemorrhage is to be feared, the organ is conserved. Clinically the cases can be placed in two groups so far as treatment is concerned.

1 Hemorrhage preceded, accompanied or rapidly followed by the beginning of labor. In these, expectant treatment is the best. Morphine is given to relieve the pain, the bag of waters is ruptured, solution of posterior pituitary is given and eventually low forceps are used.

2 Severe hemorrhage appearing before any signs of labor and the general condition indicating a probable uteroplacental apoplexy. Some recommend expectant treatment with artificial rupture of the bag of waters. Others, in severe cases, with marked shock and a toxic syndrome feel that only operative intervention can be considered, preferably low cesarean section.

In the discussion, Voron and Pigeaud of Lyons reported that, if the serum of patients suffering from purpura is injected into pregnant rabbits, visceral and intra-ovarian hemorrhages follow which resemble in every respect the lesions observed in uteroplacental hemorrhages in human beings. Brindeau and Lantuejol of Paris reported two maternal and thirty-one fetal deaths in forty-three cases. Normal labor occurred in twenty-five but operative intervention was necessary in eighteen. Cathala of Paris believes that obstetric procedures (especially embryotomy) are preferable to surgical treatment. Conservative cesarean section is rarely indicated. Cesarean section with hysterectomy should be reserved for cases in which embryotomy is dangerous. De Snoo and Streink of the Netherlands are partisans of obstetric methods combined with the administration of remedies to combat the shock. In 214 cases there were only eleven maternal deaths (5 per cent) but a fetal mortality of 78 per cent. Le Loner of Paris has been obliged to operate in only six of sixty-four cases, with two deaths (maternal). In two of the six a hysterectomy was necessary, with one death. Keller of Strasbourg was obliged to operate in only three of

twenty-seven cases. Eleven of eighteen women who were observed later became pregnant again and there were sixteen pregnancies with fourteen living children and no recurrence of a uteroplacental apoplexy. Ecalle and Suzor of Paris believe that a distinction should be made between premature detachment of a normally inserted placenta of toxic origin and uteroplacental apoplexy. In 14,000 obstetric cases they have observed the latter only seven times. All patients were operated on, with two deaths.

The first part of the third question for general discussion was the treatment of incontinence. The paper was read by Muret and Rapin of Switzerland. After a review of the anatomy of the female urethra, the authors stated that the most frequent cause is to be found in perineal and other lesions incident to parturition followed by incomplete postpartum involution. Next in order as causes are congenital or acquired relaxation of the tissues as well as the sequels of gynecologic procedures. As prophylactic measures, avoidance of prolonged labor, immediate repair of all lacerations and surveillance of uterine involution are to be recommended. Only surgical procedures offer any permanent relief. The various types of plastic operation were described and the conclusion was reached that an anterior colporrhaphy, which would include the sphincteric structures, would suffice in the majority of cases. A colpoperineorrhaphy should always be done at the same time.

The second part of the third question took up the treatment of vesicovaginal fistula and was presented by Andre of Nancy. As to etiology there were two groups: (a) fistulas incident to prolonged labor with pressure of the fetal head on the bladder or application of forceps and (b) operations on the uterus, especially total or radical hysterectomy and application of radium for cancer of the cervix. In the first group the fistulas are low, in the second much higher. Before any operation is planned, the relation of the fistula to the ureteral orifices must be ascertained by cystoscopic examination and the vagina should be dilated by tampons. The various types of operation were described, preference being given to the transvesical technique described by Marion, in fistulas following labor or operative procedures when the opening is very high and the vagina narrow. The transperitoneal (Legueu) method is especially to be recommended, although difficult, in high lying fistulas following total hysterectomy. In the discussion Vanverts of Lille said that immediate perineal repair required good light and technic. If these were not available it would be preferable not to attempt a primary closure but do this later under proper conditions. Aubert of Switzerland and Hartmann of Paris maintained that the vaginal method sufficed for both low and high fistulas.

A paper was read by Claude Beclere of Paris on functional uterine hemorrhages. Hysterosalpingography permits differentiation of hemorrhages due to pathologic lesions (from 25 to 30 per cent of the cases) from those of functional origin (from 60 to 70 per cent of the cases). Among the latter, one can identify (a) functional hemorrhages in virgins, (b) those of congenital origin, (c) those due to ovarian infection in young women, and (d) premenopausal disturbances. All are characterized histologically by a benign hyperplasia of the uterine mucosa and radiologically by a dentated aspect of the uterine shadow. In a and b the administration of progestin gives excellent results and in c vaccino-therapy and diathermy are indicated while in d roentgenotherapy is to be used.

French Otorhinolaryngologic Congress

This year's French Otorhinolaryngologic Congress was held October 17-20 at the Paris Medical School under the presidency of Professor Bremond of Marseilles. The evening before the opening of the congress a meeting of the Society for Laryngo-Esophagocopy was held. The first subject of the special reports and general discussion for the congress was the

parent society was "Indications and Results of Intracranial Surgery of the Auditory Nerve." The report had been prepared by Drs. Maurice Aubry and Marcel Ombredanne of Paris. Full credit was given to the work of Dandy, who first showed the value of section of the auditory nerve in Meniere's disease. There is a direct etiologic relation between an adjacent arachnoiditis and an atypical Meniere syndrome. Section of the acoustic nerve presents no technical difficulties but there are certain contraindications, such as the age of the patient, hypertension, a developing otitic condition and an acute anterior meningitis. Of forty-six surgical cases, complete division was done in twenty-five and partial division in nineteen while a tumor of the auditory nerve was removed in two. In the uncomplicated cases, all the operations were successful. Only patients with marked vertigo which has resisted all other forms of treatment should be operated on. There is a chance that this operation will facilitate a more accurate study of the etiology of vertigo and of vestibular physiology.

The second report was on acute inflammation of the hypopharynx in children and had been prepared by Drs. Le Moine, Bloch and Bouchet. Up to the present, this condition has been considered to belong to pediatrics rather than to laryngology, but there appears to be no contraindication to the use of endoscopic methods in both diagnosis and treatment. These severe forms of laryngitis have their origin in the subglottic portion of the larynx, termed "hypopharynx," and involve a very narrow portion in young children, among whom edema can easily occur because of the folds of the mucosa and the many lymphoid structures. This subglottic zone is hypersensitive and easily gives rise to reflexes. These subglottic forms of laryngitis include a type in which spasm predominates, i.e. the stridulous form, an asphyxiating type with marked edema, a localized type with tendency to abscess formation, and an acute fulminant type of laryngitis accompanied by tracheobronchitis in which thick exudates or membranes form which can completely occlude the lumen of these structures. The last named condition has been studied more in the United States than elsewhere because of the more widespread use of broncho-esophagoscopy. The diagnosis can be made by this method but the first problem that presents itself is to distinguish the endoscopic picture from that of a diphtheria or a reaction due to the presence of a foreign body. Low tracheotomy performed at an early period of the condition as recommended by Chevalier Jackson, is preferable to intubation because of the faulty construction of the cannula usually employed. Tracheotomy ought to be followed by aspiration and intrabronchial instillations. The importance of using moist heat and of various forms of apparatus in which oxygen or, better still, a nitrous oxide-oxygen or oxygen-helium mixture was used was emphasized. All children's hospitals should have trained endoscopists attached to their staff to meet such emergencies as acute inflammations of the hypopharynx present. They should also be equipped with the necessary apparatus for physical therapy.

Drs. Hicquet and Scherer of Brussels in a paper on radiography of the larynx with the aid of opaque medium stated that profile views were the best. Dr. Worms called attention to osteosarcomas of the mastoid in young children in which the earliest sign was an increase in size of the mastoid. Dr. Canuut and Gunsett of Strasbourg stated that tomography, i.e. radiography in sections, was very useful in the diagnosis of laryngeal cancer.

Eight personal observations of keratosis of the external auditory canal were reported by Rendu of Lyon. Cited as an example of endolaryngeal cancer by a special technique was that of a paper by Dr. Quinquin of Dijon. Dr. J. Meunier of Paris reported 41 per cent cures following six sittings in seventy-four cases of mastoiditis treated by the use of roentgen rays.

BERLIN

(From Our Regular Correspondent)

Oct 25, 1937

Developments in the Sickness Insurance

New regulations with regard to the admission of physicians to the sickness insurance practice have just been promulgated. For every 600 sick insurance club members a physician will be allowed to practice who has completed at least two years of preparatory service. Permits already granted under the older law are not affected by the new. In the selection from among candidates for the panel practice, preferment is given above all to physicians who have been active for at least two consecutive years at the public health headquarters of the Nazi party and to physicians who have been professionally active for at least one year in military or work service. On the other hand, doctors who served during the World War are no longer given preferment. Mere membership in the Nazi party is no longer a basis for preferment, a candidate must have a record of noteworthy services to the party. German physicians residing abroad who have rendered signal services to Germany or to German science are now as before admitted to the practice under special conditions. Physicians severely wounded in the World War are still accorded consideration. In addition a married candidate comes in for special consideration and the more children he has the greater the likelihood that he will be admitted. Other groups which receive preferment are doctors who have been in insurance practice in the country or in small cities for at least five years and who are seeking posts in the larger cities in order to provide their children with better educational advantages and doctors who have no assured income from property or pensions. No physician is admitted to panel practice if there exist serious personal grounds for rejection, such as addiction to drugs, political unreliability, married status of a woman physician whose family income from insurance practice would not be necessary to the economic security of the family, and simultaneous maintenance of a dental practice. As under the old regulations any doctor is excluded from insurance who is married to a person of non-German or unrelated blood, namely, to one who would previously have been designated "non-Aryan." The national fuhrer of the sickness insurance associations of Germany is empowered to make exceptions in cases which involve so called hybrids but each such case will be decided by this official on its individual merits. Presumably only hybrids of the second class would be considered, namely, persons in whose ascendancy there is but one pair of Jewish grandparents.

It is a well known fact that under the old regulations an important principle had come to be accepted (especially since the standardization of sickness insurance in Germany), namely that the insurance patient like any private patient was permitted (with certain limits) a free choice of physician. Although not all private practitioners were accustomed to treat insurance patients, the roster of the insurance physicians was formidable and accordingly a patient encountered little to prevent his freedom of choice. But this situation has been changed. At the party congress in Nuremberg the national fuhrer of physicians, Dr. Wagner, delimited contemplated restrictive measures on the patient's free choice of a physician. The following is a paraphrase of Wagner's remarks. A change will take place in the immediate future. In order to strengthen the bonds between the family physician and his patients, the insured person must now elect the services of a particular doctor for the period of one year and can consult no other during this time, either for his own illness or for that of the members of his family. Thus is inaugurated a new policy of supervision that affects both the physician and the insured. The insurance doctor has till now received compensation only

according to the number of patients treated and this meant that he had a definite economic interest in the number of sick certificates issued by him. The new legislation introduces a radically different system: the insurance doctor will be paid a certain sum for the care of the insured and the insured's family, an arrangement formerly sometimes applied to family doctors. Consequently the insurance doctor no longer has an economic stake in the number of sickness certificates or the amount of illness but, conversely, it is to his advantage that his patients remain in health, as illness now means only additional work for him without extra compensation.

The foregoing statement of the national fuhrer of physicians is in many respects revealing. His comparison of the new system with that formerly in vogue among family physicians is not exactly fair, since the annual honorarium of the insurance doctor, as envisaged in the new law, must naturally be much smaller than that formerly received by the family practitioner. Of much greater significance is the psychologic aspect of the change, for whereas previously physician and patient could quickly conclude any agreement without the interference of a third party, the ubiquitous Institute of Social Insurance now enters into a sort of partnership with the patients and this anonymous "partner" constantly makes its presence felt. This is the "supervision" mentioned by Dr. Wagner and which, although needed for purposes of administration, is capable of exercising a definite influence on the relationship (or on the psychologic relationship, at least) between doctor and patient. Yet even more important than this and the essential feature of the new policy is the argument with regard to the striking reversal of the physician's material interest, namely, that the doctor will now benefit from the continued health of his patients rather than from their illnesses. Apart from many exaggerations which certainly (consciously or as in most instances unconsciously) had been present, the insurance doctor had become, so to speak, the "advocate" of his patients in their claims against the insurance clubs for any kind of special treatment or medicament. But does not the possibility exist under the new plan with its mentioned displacement of economic interest, that a doctor motivated by the wish to see naught but health may relax his careful observation of insurance patients or, quite unconsciously, become loath to recognize true disease? This possible development has been cautiously urged by other critics of the new plan, but the fuhrer of physicians appears to consider it of less importance than the opposite tendency, which, as he mentioned in his speech, leads the doctor to look everywhere for disease. This problem is thus by no means solved and one can only await a further turn of events.

The organization of the sick insurance has been simplified by a new ordinance that became effective October 1. Henceforth there will be four national associations of sickness insurance clubs: municipal, rural, industrial and guild. All are under the jurisdiction of the national minister of labor. Every sick insurance club must be affiliated with one or another of these national associations. The latter serve the individual clubs in an advisory capacity in matters pertaining to the termination or alteration of contracts with the organized representatives of the medical profession, institutions for the sick, dealers in supplies used by the sick insurance and so on. Furthermore, among other administrative functions the national associations supervise the prompt settlement of all honorariums paid out by the member clubs to the physicians. In future the four national associations will be the only organizations of affiliated insurance clubs, other such organizations (about 100 of which were still in existence October 1) have been dissolved. The new law also provides that no insurance association can any longer represent one-sided interests, as occasionally happened under the old organization.

As reported previously, a comprehensive nationalization of independent insurance clubs has been in progress for quite

some time. In the past, many of these independent clubs ran into financial difficulties and not the least reason for this was their small size which prevented them from maintaining the necessary actuarial balance. As a rule this situation led to increased expenditures that exceeded the income from contributions. The reforms in organization of the sickness insurance, which went into effect in 1933, were chiefly aimed at the creation of larger spheres of activity for weakly functioning and financially embarrassed clubs by consolidation of these clubs with other more solvent clubs. As a result of this program the number of independent clubs declined by around 2,000 during the years from 1933 to 1937, namely, from about 6,550 to 4,600. Most pronounced were the declines in the number of municipal clubs (from about 2,000 to 900) and the guild clubs (from about 800 to 300). As a further result of this reorganization the average premium rate in the municipal clubs dropped from 57 per cent in 1933 to 54 per cent in 1937, in the guild clubs there was a corresponding decline from 49 per cent to 47 per cent during the same period. These reductions were effected without any curtailment of benefits to members. On the contrary, the services of the clubs were able to function more adequately because of the sounder financial position.

The German Substitute for the Nobel Prize

A law was recently passed in Germany, motivated by political consideration and specifically by dissatisfaction with the selection of a Nobel peace prize winner, according to which German citizens are no longer permitted to accept a Nobel prize, and a national prize was created as a substitute (*THE JOURNAL*, April 17, 1937, p. 1354). This new prize has just now been awarded on the occasion of the party congress in Nuremberg. Two physicians were among the prize winners: Professor Sauerbruch, Berlin, ordinarius in surgery, and Professor Bier, the surgeon, now retired. The cash prize was divided between the two men so honored, each of whom received 50,000 marks.

BUENOS AIRES

(From Our Regular Correspondent)

Oct. 20, 1937

Experimental Hypertension

Profs. B. A. Houssay and J. C. Fasciolo, in lectures delivered at the Academia Nacional de Medicina and the Sociedad Argentina de Biología, reported studies on experimental arterial hypertension induced by compressing the renal artery according to the technique of Goldblatt, Lynch and Summerville. In arterial hypertension induced by unilateral compression of the renal artery, removal of the ischemic kidney results in normalization of the blood pressure, which continues normal after the experiment. Implantation of the ischemic kidney and its compressed renal artery, by uniting the renal artery to the carotid artery and the renal vein to the jugular vein in the neck of a dog in hypertension which was recently nephrectomized and treated with chloralose, increases the arterial pressure of the receptive dog within five or ten minutes 40 or 70 mm of mercury up to an approximate high level of 200 mm of mercury. If the grafted kidney is removed hypertension does not diminish but continues high for the first two or three hours after its removal. If the kidney is transplanted in another dog in the same condition as the former, the same increase of arterial pressure is induced in the former as in the latter. The blood pressure of receptive dogs does not increase if the transplanted kidney is normal whether the structure was removed from a normal dog or from a dog in a state of hypertension. Transplantation of both normal kidneys induced intense hypertension only in two dogs and slight hypertension in one. The experiments prove that the ischemic kidney secretes substances that cause permanent arterial hypertension.

New Teaching Chairs

The Escuela de Medicina of Buenos Aires recently lost thirty-eight teaching chairs, and lately chairs have been established for the teaching of semeiology, nutritional disease, renal surgery, history of medicine and puericulture. Profs. R. Izquierdo, Pedro Escudero, M. Balado, J. P. Beltrán and Pedro Elizalde are the appointed teachers. Four physicians were appointed assistant professors to the classes of surgical pathology. The Escuela de Odontología of Buenos Aires increased the teaching chairs from six to sixteen. Discussions are marked on the subject because of the fact that there are neither rooms nor money enough for incurring new expenses. The money allowed for teaching expenses has been cut down, since 1930 to almost half the original amount.

Fellowships

Fellowships have been granted as follows. From the Asociación Argentina para el Progreso de las Ciencias to Drs. Moisset de Espanes, A. Manso Soto, Schwarz and Prosky. They will do special studies on pharmacology and bacteriology in Paris, London and the Pasteur Institute of Paris respectively. The Academia Nacional de Medicina granted the Duvoisin fellowship to Dr. N. G. Foglia, who will work first with Professor Collip of the McGill University in Montreal and then in the United States.

The Comisión Nacional de Cultura granted a fellowship to Dr. Introzzi to study surgery in hypertension and to Dr. J. C. Nuñez to study gastro-enterology in the United States.

The Rockefeller Foundation granted a fellowship to C. M. Pomeroy of Clark University to work in the Instituto de Fisiología of the Faculty of Medicine of Buenos Aires.

Drs. N. Ludueña, J. B. Odoriz and C. A. Tanturi came back home after having made fellowship studies. Dr. Ludueña worked on pharmacology at Oxford, Dr. Odoriz worked on neurophysiology at Oxford and the Rockefeller Institute in New York and Dr. Tanturi worked in the Department of Physiology of the Northwestern University Medical School in Chicago.

Deaths

Dr. Manuel A. Santas, substitute professor of pediatrics of the Faculty of Medicine of Buenos Aires and adviser to the faculty, is dead.

Dr. Miguel Angel Finochietto, head of the ward of practical work in descriptive anatomy of the Faculty of Medicine of Buenos Aires, is dead.

Dr. Ricardo Colon, a fellow of a number of the Academia Nacional de Medicina, died recently at the age of 77.

Marriages

ADLAI STEPHENSON LILLY, Richmond, Va., to Mrs. Sarah Bugg Gholson of Henderson, N. C., October 23.

POTTER A. RICHARDS, Vinton, Va., to Miss Margaret Frances Morrison of Rockbridge County, September 18.

LEO BROWN SKEEN to Miss Frances Elizabeth Ashburn both of Troy, N. C., in Durham, September 13.

THOMAS ADDISON MORGAN, Franklin, Va., to Miss Margaret Virginia Ellis, in Ashland, September 4.

ARAL C. SORENSON, Davenport, Iowa, to Miss Margaret Bagley of Chicago, October 16.

LOUIS C. POSEY to Miss Mamie Lowe Walker both of Birmingham, Ala., October 2.

LEVIN HENRIKSON PEEK to Miss Frances E. O'Brien both of Cherokee, Iowa, October 8.

CHARLES K. PADGETT to Miss Virginia Hoey Smith both of Shelby, N. C., November 2.

RAYMOND V. MCCRAY to Miss Martha Brown both of Vermont, Ark., October 15.

HOMER R. MAULDING, Atlanta, to Miss Thelma Irene Hester, September 26.

Deaths

William Craig Meanor • Pittsburgh, University of Pennsylvania Department of Medicine, Philadelphia, 1895, member of the American Academy of Ophthalmology and Otolaryngology, fellow of the American College of Surgeons, served during the World War, surgeon Beaver Valley General Hospital, New Brighton, Rochester General Hospital, Rochester, Pa., and the Valley Hospital, Sewickley, aged 65 died, September 25, of cerebral hemorrhage

Sinclair Tousey, Garden City N Y, College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1888 surgeon outpatient department, Roosevelt Hospital, New York, 1891-1900, formerly director and consulting surgeon of the St Bartholomew Clinic and Hospital, author of 'Medical Electricity and Röntgen Rays' aged 73 died, September 25 in the Morrison Hospital Whitefield, N H, of valvular heart disease

Solomon Jones • Danville Ill, Illinois Medical College, Chicago, 1902, past president and secretary of the Vermilion County Medical Society, past president of the Aesculapian Medical Society of the Wabash Valley fellow of the American College of Surgeons, formerly member of the city board of education, on the staff of the Lake View Hospital aged 65, died September 25, of cerebral hemorrhage

John Crego Lester • New York Long Island College Hospital, Brooklyn, 1879 member of the American Otolaryngological Society, fellow of the American College of Surgeons, assistant surgeon, New York Eye and Ear Infirmary, aged 81, died, September 25, in the House of Mercy Hospital, Pittsfield, Mass., of diabetes mellitus, hypostatic pneumonia and hypertrophy of the prostate

Warren Wilson • Northfield Minn, Chicago Medical College, 1889, an Affiliate Fellow of the American Medical Association past president of the Rice County Medical Society, served during the World War, for many years member and secretary of the school board, on the staff of the Northfield City Hospital aged 74 died September 4, of heart disease

Henry Martin Cass, Johnson City, Tenn Vanderbilt University School of Medicine, Nashville, 1900, member of the Tennessee State Medical Association, fellow of the American College of Surgeons, veteran of the Spanish-American and World wars, on the staff of the Appalachian Hospital, aged 62 died, September 13 of coronary thrombosis

Thomas Jefferson Brothers • Anniston, Ala College of Physicians and Surgeons, Baltimore, 1903 fellow of the American College of Surgeons, past president of the Calhoun County Medical Society served during the World War, surgeon to the Garner Hospital aged 57 died, September 1 of coronary thrombosis and arteriosclerosis

William Grosvenor Fulton, Scranton Pa Bellevue Hospital Medical College, New York, 1886 fellow of the American College of Surgeons consulting surgeon, Scranton State and Moses Taylor hospitals Scranton, Nesbitt Memorial Hospital, Kingston and Carbondale (Pa) General Hospital aged 76, died, September 27 of arteriosclerosis

George W Allaman • Atchison, Kan Ensworth Medical College, St Joseph Mo, 1892 past president of the Atchison County Medical Society formerly member of the state legislature, member of the city council and mayor of Atchison on the staff of the Atchison Hospital aged 74, died, September 24, of cerebral hemorrhage

Frederick Ellis Jones, Quincy, Mass Harvard University Medical School, Boston 1897, member of the Massachusetts Medical Society served during the World War formerly health officer, aged 64 on the staff of the Quincy City Hospital where he died, September 29 of chronic interstitial nephritis and mesenteric thrombosis

Peter Drummond, Grant Mich Trinity Medical College Toronto Ont, Canada 1888 Queens University Faculty of Medicine Kingston Ont Canada 1889, member of the Michigan State Medical Society formerly village president and president of the school board aged 70, died, September 24 of coronary thrombosis

Clarence Augustus Shimansky, Sandusky Ohio University of Michigan Homeopathic Medical School Ann Arbor 1898 member of the Ohio State Medical Association aged 62 on the staffs of the Providence Hospital and the Good Samaritan Hospital, where he died September 13 of intestinal obstruction

Leroy Taylor Howard • Lieutenant Colonel U S Army, Hyattsville Md Georgetown University School of Medicine Washington D C 1913 served during the World War

entered the medical corps of the U S Army as a first lieutenant in 1917, aged 48, died, September 30, of arteriosclerosis

Thomas William Smith, Newberry, S C, Louisville (Ky) Medical College, 1891, member of the South Carolina Medical Association, past president of the Newberry County Medical Society chairman of the board of health of Newberry, aged 68, died, September 11, in a hospital at Columbia

Frank Alembert Brayton, Indianapolis, Indiana University School of Medicine, Indianapolis, 1912, served during the World War, associate in dermatology and syphilology at his alma mater on the staffs of the City and Methodist hospitals, aged 47, died, September 20, of heart disease

Jules Louis Prevost, Port Providence, Pa, Temple University School of Medicine, Philadelphia, 1909 also a clergyman formerly lecturer on history of medicine and medical terminology, at his alma mater, at one time a missionary in Alaska, aged 74, died, September 2

John Lee, Detroit Detroit College of Medicine, 1890, formerly assistant professor of medicine at his alma mater, veteran of the Spanish-American War, for many years on the staff of St Marys Hospital, aged 68, died, September 22, of chronic nephritis and myocarditis

Charles William Huff, Jackson, Wyo, Baltimore Medical College, 1912, member of the Wyoming State Medical Society, fellow of the American College of Surgeons on the staff of St John's Hospital, aged 49 died, September 22, at Idaho Falls, Idaho of agranulocytosis

Thomas Henry Hall, Brighton, Ill, Rush Medical College, Chicago, 1884, member of the Illinois State Medical Society, formerly mayor, and member of the board of health, aged 77, died, September 10 of sarcoma of the pelvic bones with metastasis to lungs and other organs

George R Clayton, Monon, Ind, Kentucky School of Medicine, Louisville, 1880, member of the Indiana State Medical Association, for many years member of the school board, health officer, aged 83 died, September 8 at Rensselaer, of carcinoma of the rectum

Pedro G Acosta, Rome, N Y University of Santo Tomas College of Medicine and Surgery, Manila, P I, 1925, for several years resident physician to the Oneida County Hospital aged 36 died, September 28 of chronic interstitial nephritis and cerebral hemorrhage

Marion Blaisdell MacMillan, Milwaukee, University of Texas School of Medicine Galveston, 1898, formerly connected with the U S Veterans Bureau, aged 61, died, September 1, in the Epworth Hospital, South Bend, Ind, of perforated gastric ulcer and peritonitis

William Robert Perdue, West Chester, Pa, University of Pennsylvania Department of Medicine Philadelphia, 1874, member of the Medical Society of the State of Pennsylvania, aged 88, died, September 13, in the Chester County Hospital of chronic myocarditis

Joseph Cameron McClurkin, Evansville, Ind, Bellevue Hospital Medical College, New York, 1880, member of the Indiana State Medical Association, for many years on the staff of St Marys Hospital, aged 84, died, September 18, of cerebral hemorrhage

Arthur Charles Wheeler, Erie, Pa College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1893, member of the Medical Society of the State of Pennsylvania aged 68, died, September 4, in Waterford, of paralysis agitans

Alice Catherine Fitzsimmons Lankford, Princess Anne, Md Woman's Medical College of Pennsylvania, Philadelphia, 1904 member of the Medical and Chirurgical Faculty of Maryland, aged 54 was found dead, September 28, of a self-inflicted bullet wound

Ralph Allison Goodner, Anna Ill, Rush Medical College, Chicago, 1888 Jefferson Medical College of Philadelphia, 1891 medical superintendent and managing officer of the Anna State Hospital, aged 72 died September 19, of enteritis and chronic myocarditis

Leo Wesley Chilton, Boise, Idaho University of Minnesota College of Medicine and Surgery, Minneapolis 1904 served during the World War, for many years associated with the Veterans Administration Faculty aged 59 died, September 14

George E Webster, Kingsville, Ohio, Western Reserve University Medical Department, Cleveland, 1880 at one time coroner of Ashtabula County aged 79 died August 22, in the Deaconess Hospital, Cleveland, of hypertrophy of the prostate

Milton H Herbein, Macungie, Pa., Jefferson Medical College of Philadelphia, 1879, member of the Medical Society of the State of Pennsylvania, aged 80, died, September 17, of cerebral thrombosis, arteriosclerosis, chronic myocarditis and nephritis

James Samuel Hess, Mauston, Wis., Barnes Medical College, St. Louis, 1893, member of the State Medical Society of Wisconsin, on the staff of the Mauston Hospital, aged 73, died, September 15, of chronic myocarditis and coronary occlusion

Ord Otterbein Le Master, Sidney, Ohio, Starling Medical College, Columbus, 1902, member of the Ohio State Medical Association, aged 61, on the staff of the Wilson Memorial Hospital, where he died, September 15, of an impacted gallstone

Albert Samuel Wall, Los Angeles, Miami Medical College, Cincinnati, 1890, member of the California Medical Association, past president of the Champaign County (Ill.) Medical Society, aged 76, died, September 9, of diabetes mellitus

Leopold Kaffie, Corpus Christi, Texas, Louisville (Ky.) Medical College, 1903, member of the State Medical Association of Texas, aged 57, died, September 28, in a hospital at San Antonio, of myocarditis and carcinoma of the bladder

William Pierce Fitzgerald, Gerald, Mo., Missouri Medical College, St. Louis, 1887, member of the Missouri State Medical Association, aged 76, died, September 14, of injuries received in an automobile accident and hypostatic pneumonia

David Beaty Frontis, Ridge Spring, S. C., University of Maryland School of Medicine, Baltimore, 1880, member of the South Carolina Medical Association, aged 81, died, September 24, in the Columbia (S. C.) hospital, of pneumonia

William E Stemen, Grosse Pointe Park, Mich., Fort Wayne (Ind.) College of Medicine, 1894, served during the Spanish-American and World wars, aged 67, died, September 12, of aortitis and chronic myocarditis

Charles L Willian, Buffalo, Ky., Kentucky School of Medicine, Louisville, 1889, aged 76, died, September 25, in the Kentucky Baptist Hospital, Louisville, of arteriosclerosis, heart disease and hypertrophy of the prostate

Edward Charles Kauffman, Union, Iowa, State University of Iowa College of Homeopathic Medicine, Iowa City, 1901, aged 65, died, September 16, in the Deaconess Hospital, Marshalltown, of coronary thrombosis

Joseph Briggs Murphy, Taunton, Mass., Harvard University Medical School, Boston, 1883, member of the Massachusetts Medical Society, aged 77, died, September 5, at Falmouth Heights, of heart disease

David Gilbert Estes, Athens, Ala., University of Tennessee Medical Department, Nashville, 1901, member of the Medical Association of the State of Alabama, aged 58, died, September 18, of coronary occlusion

Jean Baptiste Archambault, Woonsocket, R. I., School of Medicine and Surgery of Montreal Faculty of Medicine of the University of Laval at Montreal, 1894, aged 69, died, September 21, of cerebral hemorrhage

John Milton Smith, New Philadelphia Ohio Cincinnati College of Medicine and Surgery, 1880, for many years a member of the board of education, aged 81, died, September 5, of arteriosclerosis and uremia

Don H Hinckley, Chicago, Jenner Medical College, Chicago, 1909, aged 59, died, September 5, in the Victory Memorial Hospital, Waukegan, Ill., of injuries received in a fall from a tree

Walter Q Harper, Los Angeles, Kentucky School of Medicine, Louisville, 1898, on the staff of the Physicians and Surgeons Hospital, Glendale, aged 64, died, September 19, of coronary embolus

Ulric Zwingle Junkermann, Pomeroy Ohio Cleveland-Pulte Medical College, 1913, served during the World War, aged 51, died, September 24, at his home in Middleport, of angina pectoris

Isaac Chase Irish, Bowdoinham, Maine Medical School of Maine, Portland, 1878, formerly member of the school board and health officer, aged 83, died, September 27, of carcinoma of the pancreas

Joseph French Alsop, Prospect Va., University of Virginia Department of Medicine, Charlottesville, 1898, member of the Medical Society of Virginia, aged 85, died, September 4, suddenly

Flora Allison Wright, Tulsa, Okla., Oklahoma School of Medicine, Oklahoma City, 1910, died, September 9, in the Southern Oklahoma Hospital, of tuberculosis

Andrew John Heimark, Fargo, N. D., College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1904, aged 57, died, September 17, of myocarditis

Clarence Garrabrant, Atlantic City, N. J., College of Physicians and Surgeons, Baltimore, 1886, aged 81, died, September 30, in a local hospital of chronic prostatitis and obstruction

John Sidney Hood, Gastonia, N. C., Jefferson Medical College of Philadelphia, 1907, member of the Medical Society of the State of North Carolina, aged 53, died, suddenly, September 14

Cooley S. Ellis, Lonoke, Ark., Louisville (Ky.) Medical College, 1905, member of the Arkansas Medical Society, aged 61, died, September 4, of carcinoma of the stomach and chronic nephritis

Henry A. McIlmoyl, Ogdensburg, N. Y., McGill University Faculty of Medicine, Montreal, Que., Canada, 1900, aged 83, died, September 21, of chronic endocarditis and acute parotitis

Charles Hammond, Topeka, Kan., Kansas Medical College, Medical Department of Washburn College, Topeka, 1897, aged 63, died, September 17, of septicemia and endocarditis

Leinster Duffy, New Bern, N. C., College of Physicians and Surgeons, Baltimore, 1889, aged 79, died, September 20, of cirrhosis of the liver with biliary obstruction

Edwin S. Lothrop, Washington, D. C., Howard University College of Medicine, Washington, 1893, aged 67, died, September 23, of mediastinal tumor and carcinoma

Frederick Stork, Wickliffe, Ohio, Cleveland Homeopathic Medical College, 1903, aged 73, died, September 12, of coronary thrombosis and lymphatic leukemia

Anti Costa Watts, Birmingham, Ala., Louisville (Ky.) Medical College, 1892, aged 67, died, September 12, at his home in Lewisburg, of chronic myocarditis

Charles Joseph Roberts, Berwyn, Pa., University of Pennsylvania Department of Medicine, Philadelphia, 1882, aged 80, died, September 3, of myocarditis

Oscar D. Whalin, Chicago, Rush Medical College, Chicago, 1890, aged 71, died, suddenly, September 12, of cerebral hemorrhage and arteriosclerosis

William Garr Shadrach, Culpeper, Va., University of Virginia Department of Medicine, Charlottesville, 1892, aged 61, died, August 12, of cerebral hemorrhage

Harry M. Lincoln, Wilton, N. Y., Albany (N. Y.) Medical College, 1886, aged 79, died, September 24, of carcinoma of the gallbladder with metastasis to the liver

Duff M. Hodges, East Prairie, Mo., University of Tennessee Medical Department, Nashville, 1890, aged 81, died, September 20, of cerebral hemorrhage

Solomon Oliver Mayerson, Chicago, Loyola University School of Medicine, Chicago, 1921, aged 48, died, September 2, of cerebral vascular hemorrhage

Taylor Jirardeau Frierson, Augusta, Ga., Leonard Medical School, Raleigh, N. C., 1902, aged 62, died, September 1, of heart disease and influenza

John Washington Meek, Chicago, Rush Medical College, Chicago, 1881, aged 78, was found dead, September 17, of gunshot wounds of the head

Erly H. Madison, Olean, N. Y., University of Buffalo School of Medicine, 1891, aged 69, died, September 15, of heart disease and arteriosclerosis

John R. Archer, North Baltimore Ohio, Starling Medical College, Columbus, 1887, aged 77, died, September 4, of carcinoma of the stomach

William Holmes Bryan, Pavo, Ga., Atlanta Medical College, 1893, aged 69, died, September 1, of chronic nephritis and arteriosclerosis

George F. Henry, Kelat, Ky., Cincinnati College of Medicine and Surgery, 1879, aged 83, died, September 3, of valvular heart disease

William B. McIntosh, Colfax, Ill., Barnes Medical College, St. Louis, 1895, aged 71, died, September 8, of carcinoma of the prostate

Edwin W. Duncan, Burlington, Ky., Medical College of Ohio Cincinnati, 1885, aged 76, died, September 28, of myocarditis

Thomas S. McCoy, Bradenton Fla., Hospital Medical College Atlanta, Ga., 1910, aged 58, died, September 27, of malaria

Bureau of Investigation

MISBRANDED "PATENT MEDICINES"

Abstracts of Notices of Judgment Issued by the Food and Drug Administration of the United States Department of Agriculture

[EDITORIAL NOTE The abstracts that follow are given in the briefest possible form (1) the name of the product, (2) the name of the manufacturer, shipper or consigner, (3) the composition, (4) the type of nostrum (5) the reason for the charge of misbranding, and (6) the date of issuance of the Notice of Judgment—which may be considerably later than the date of the seizure of the product.]

Tru Tablets of Aspirin—Blackstone Mfg Co Newark N J Composition 497 grains of aspirin per tablet For acute rheumatism, gout, sciatica tonsillitis influenza etc Fraudulent therapeutic claims—[N J 25150 August 1936]

Bron Ki—Bron Ki Co Columbus Ohio Composition Eucalyptol and terebinthine Fraudulently represented as a cure for bronchitis and kindred disorders—[N J 25381 October 1936]

Tipona Tablets—Hi Test Laboratories doing business as Mison Laboratories and Tipona Co Cleveland Composition Essentially phenol phthalein (1 grain per tablet), caffeine and desiccated thyroid (about ¼ grain per tablet) Fraudulently represented to prevent or eliminate fat to produce muscle bone and sound flesh correct glandular disorders resist disease germs etc The claim No drugs of Any kind was also fraudulent—[N J 25385 October 1936]

Nurse Brand Blood Purifier—DeFree Co Holland Mich Composition Essentially potassium iodide and extracts of plant drugs including a laxative with alcohol sugar and water On the label the plant drugs were declared to be Honduras sarsaparilla dandelion root burdock root and clover tops Fraudulent therapeutic claims—[N J 25387 October 1936]

Sanacaps—Jessie Rogers trading as Osan Products Co Chicago Composition Baking soda tartaric acid and a small amount of chloramine T Fraudulently represented as a germicide and a cure for leul or rhea and inflammation—[A J 25394 October 1936]

Rogers' (Dr) Relief Compound—Jessie Rogers trading as Osan Products Co Chicago Composition Aloe a turpentine oil resembling oil of savin and iron sulfate coated with sugar and calcium carbonate Fraudulently represented as a remedy for female disorders—[N J 25394 October 1936]

Obeayne (Formerly Medogyn Hygienic Vaginal Jelly)—Dayton Laboratories Inc Dayton Ohio Composition Essentially water glycerin gum tragacanth lactic acid a quinine compound hydroxyquinoline and small amounts of resorcinol and zinc compound Fraudulently represented as a cure for leukorrhea vaginitis and gonorrhea as a prophylactic for gonorrhea and syphilis and a germicide Fraudulent therapeutic claims—[V J 25405 October 1936]

Grabli's (Dr) Prescription No 1313—Hi Test Laboratories doing business as the Mison Laboratories Cleveland Composition Tablets containing 771 grains of cinchophen each For rheumatism neuritis arthritis uric acid etc Fraudulent therapeutic claims—[A J 25405 October 1936]

BP Prescription—DeFree Co Holland Mich Composition Essentially potassium iodide extracts of plant drugs including a laxative with alcohol sugar and water For impure blood Fraudulent therapeutic claims—[N J 25406 October 1936]

Lur Eye Lash Developer—Lur Eye Products Inc New York Composition Essentially 13 per cent of volatile oils including wintergreen and thymol in a base of white petrolatum For developing eyelashes relieving bloodshot or inflamed eyes and granulated lids Fraudulent therapeutic claims—[V J 25409 October 1936]

Blackstone's Tru Laxative Bromides Quinine Cold Tablets—Blackstone Mfg Co Newark N J Composition Essentially acetanilid (14 grains per tablet) quinine dihydrobromide (0.96 grain per tablet) and aloe For the gripe colds coughs etc Fraudulent therapeutic claims—[N J 25415 October 1936]

Tru Lax—Blackstone Mfg Co Newark N J Composition Essentially phenolphthalein (17 grains per tablet) and chocolate which was worm eaten and contained wormy excreta For sour stomach jaundice bad breath headache etc Fraudulent therapeutic claims—[N J 25419 October 1936]

Lubrol—Atlas Laboratories Akron Ohio Composition Water boric acid (19 per cent) Irish moss glycerin starch lactic acid and a small amount of oxyquinoline sulfate Fraudulently represented as a germicide and a remedy for leukorrhea cervicitis vaginitis etc—[A J 25415 October 1936]

Knifers Tonic (Formerly Dr Neuffer's Lung Tonic)—McMurray Drug Co Abbeville S C Composition Essentially creosote a chloride alcohol (17 per cent) and water For coughs bronchial asthma etc Fraudulent therapeutic claims—[A J 25420 October 1936]

Pneumo Nox—Willard Products Co Greenville N C Composition Essentially volatile oils including menthol and eucalyptol in petrolatum For bronchial and lung troubles Fraudulent therapeutic claims—[N J 25421 October 1936]

Wiltone—United Distributors, Inc Louisville Ky Composition Essentially epsom salt salicylic acid and water flavored with cinnamon Fraudulently represented as a cure for headache chronic maluria rheumatism impure blood etc—[N J 25423 October 1936]

Krispy Krumbs—Better Wheat Foods Co and Denton Rogers Logan Utah Composition Essentially wheat containing a large amount of bran with little if any flaxseed present Misbranded in the statement 100% Whole Wheat whereas it was not Fraudulently represented as a remedy for stomach ulcers kidney and liver disorders rheumatism diabetes etc—[N J 25851 January 1937]

Exsereo Antiseptic Deodorant Disinfectant—Exterminating Service Co Inc, Pittsburgh Composition Essentially soap water coal tar neutral oils and phenols Fraudulently represented as an antiseptic and disinfectant and an effective treatment for hair and scalp a douche and a remedy for chapping itching and minor wounds—[N J 25805 January 1937]

Gyptol—Folsom Extract Co Inc Lynn Mass Composition Soap phenols coal tar neutral oils and water Fraudulently represented as an antiseptic if used according to directions and a pain remedy—[N J 25806 January 1937]

Sanderson's (Dr P C) Indian Herbs of Joy and Blood Cleanser—Aschenbach & Miller Inc Philadelphia Composition Ground crude drugs including aloe cinnamon and ginger Fraudulently represented as a blood cleanser health promoter and a treatment for liver disorders dyspepsia rheumatism malarial fevers etc—[N J 25819 January 1937]

Sulfo Kresol Tabs—Ehrhart & Karl Inc Chicago Composition Oxyquinoline sulfate (slightly more than ¼ grain per tablet) and milk sugar free sulfur and cresol were not found Misbranded because of misleading name fraudulently represented as a cure for inflammatory conditions septicemia and ulcerated throat—[N J 25802 January 1937]

Cafumet Herb Tea—Joseph E Meyer trading as Indiana Botanic Gardens Hammond Ind Composition Dried plant material including senna leaves juniper root cascara bark fennel seed licorice mallow root leaves flowers and unidentified woody material Fraudulently represented as a remedy for aching joints nervousness all disorders due to constipation including cancer etc—[N J 25812 January 1937]

Kloria—Kloria Co Fort Wayne Ind Composition Chloramine and salt For most skin diseases inflammations sore throat inflamed eyes and dandruff Fraudulent therapeutic claims—[N J 25807 January 1937]

Red Cross Brand Periodic Pills—Ernest E Schneider trading as Snyder Products Co Chicago Composition Iron sulfate plant material including a laxative and a preparation of ergot coated with sugar and chalk Fraudulently represented as a female regulator—[N J 25826 January 1937]

Voxol—John H Vernet trading as Voxol Laboratories Oak Park Ill Composition Essentially a fixed oil containing volatile oils including eucalyptus and menthol For sinus disorders asthma pneumonia diphtheria etc Fraudulent therapeutic claims—[N J 25825 January 1937]

Kavatone Soft Mass Pills—Gray's Medicine Co, South Bend Ind Composition Essentially plant drugs including a laxative For gall bladder and liver troubles etc Fraudulent therapeutic claims—[N J 25810 January 1937]

Hygena—Lee W Wiggins trading as Hygena Laboratories Atlanta Ga Composition Essentially epsom salt boric acid and ammonium alum perfumed with volatile oils including peppermint Not antiseptic as claimed Fraudulently represented as a remedy for sore foot inflammation wounds hemorrhoids leukorrhea etc—[A J 25827 January 1937]

Congoin—Congoin Co Los Angeles Composition The leaves of yerba mate a caffeine bearing plant Fraudulently represented as supplying necessary minerals lacking in foods and as a remedy for mental strain acid stomach neuritis rheumatism etc—[A J 25828 January 1937]

An Idin—Hygienic Supply Co Loudonville N Y Composition Essentially an iodine compound incorporated in petrolatum and perfumed with wintergreen For sciatica enlarged glands arthritis etc Fraudulent therapeutic claims—[N J 25834 January 1937]

Snyder's (S P) Tablets Prescription No XX—Ernest E Schneider trading as Snyder Products Co Chicago Composition Iron sulfate plant material including a laxative and a minute amount of alkaloid coated with sugar and chalk Fraudulently represented as a remedy for obstinate and abnormal delayed eases of menstruation—[N J 25826 January 1937]

Pfeiffer's Sore Throat Remedy—S Pfeiffer Mfg Co St Louis Composition Water glycerin ammonium chloride potassium chlorate and sodium benzoate with wintergreen flavor For tonsillitis hoarseness ulcerated or mouth etc Fraudulent therapeutic claims—[A J 25836 January 1937]

Kompo Bile Salts Tablets—Kompo Co Atlanta Ga Composition Small proportions of iron calcium and magnesium compounds bile acid extracts of plant drugs and phenolphthalein (approximately ½ grain per tablet) Fraudulently represented as a remedy for headaches indigestion liver and kidney disorders gallstones heart trouble cancer etc—[A J 25829 January 1937]

Correspondence

MENTAL DISTURBANCES FROM ATROPINE OR NOVATROPINE GIVEN TO SUBJECTS UNDER THE INFLUENCE OF INSULIN

To the Editor—Though Dr J P Quigley's article (*THE JOURNAL*, October 23, p 1363) is of value in offering pharmacologic evidence for the clinical effectiveness of belladonna derivatives in idiopathic hypoglycemia, his "warning against the administration of atropine preparations" in these conditions, based on observations interpreted as delayed synergistic action, is not justified. Aside from the facts that idiopathic hypoglycemia, most frequently, is not due to hyperinsulinism, and that the transitory beneficial action of belladonna derivatives on hypoglycemic manifestations would naturally be followed by an aggravation of the preceding condition as the effect of the drug wore off, doses of atropine or novatropine respectively greater than $\frac{1}{400}$ grain (0.65 mg) or $\frac{1}{25}$ grain (25 mg) under no circumstances can be considered "moderate." When average doses of belladonna derivatives by mouth are not infrequently followed by dryness and dilatation of the pupils, surely subcutaneous doses of atropine as large as $\frac{1}{50}$ grain (18 mg) or $\frac{1}{20}$ grain (35 mg) of novatropine may be expected to be followed, not infrequently, by symptoms of atropinism, even in conditions not characterized by hypoglycemia.

JOHN F QUINLAN, M.D., San Francisco

PORTABLE APPARATUS FOR PROLONGED ARTIFICIAL RESPIRATION

To the Editor—Dr Flagg in a communication published in *THE JOURNAL*, October 9, page 1216, writes concerning patients with poliomyelitis requiring respirator treatment but who are in communities where respirators are not available. He suggests laryngoscopy, intubation and insufflation of oxygen under pressure as a practical means of tiding such patients over this fatal period. He further states that "injuries directed to personnel interested in the care of such cases reveals that the technic has not been used and is not being used."

A portable apparatus for prolonged artificial respiration was devised (Brahdy, Leopold, and Brahdy. *M B Am J M Sc* 178 405 [Sept] 1929) and used at the Willard Parker Hospital before the present type of respirator became available. When artificial respiration in a respirator is advocated it should be stated that this treatment sometimes has serious and fatal sequelae (Brahdy, M B and Lenarsky. *Maurice J Pediat* 8 429 [April] 1936). Patients with mild or even moderate respiratory embarrassment usually can be tided over their critical period by sedation and reassurance. This phase of the management of poliomyelitis was discussed in an editorial in *THE JOURNAL* (Dec 23 1933, p 2053).

M BERNARD BRAHDY, M.D. Mount Vernon N Y

GONORRHEAL ARTHRITIS IN INFANCY

To the Editor—May I direct the attention of Drs S J Hoffman and Maurice Schneider (*Gonorrheal Sepsis in an Infant* *THE JOURNAL*, October 30 p 1447) to a report by M B Cooperman (*Gonorrheal Arthritis in Infancy* *Am J Dis Child* 33 932 [June] 1927). This report covers an epidemic of gonococcal infection involving sixty-seven (of 182 new-born infants exposed). Of the fifty-eight infants, fifty-three developed joint infection, the remainder had meningeal involvement. Forty-four (of the fifty-three) boys, twenty-three girls were affected. One infant developed gonorrheal arthritis.

Otherwise first symptoms were not noted until the eighth or ninth day after exposure (i.e., after birth), elevated temperature, toxic rash, polyarthritis and superficial abscesses. On the eleventh day, diarrhea with purulent stools, and vaginitis were noted. The only positive blood culture obtained, and this after ten days' incubation, was in a boy with polyarthritis. Five boys and three girls had a gonococcal proctitis with positive rectal smears. In no case was there evidence of heart, kidney or lung involvement, and there were no deaths.

A bacteriologic study of a purulent stool early in the epidemic might have disclosed the identity of the organism until the rampage ten days before its initial identification in joint exudates. Writers seem to be minimizing the rectum as a portal of entry for the gonococcus. This possibly is applicable also to the umbilical vessels.

NATHANIEL HURWITZ, M.D., Philadelphia

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY CONSULTING AUTHORITIES. THEY DO NOT HOWEVER REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS BUT THESE WILL BE OMITTED ON REQUEST.

LEUKOCYTE COUNT IN ALLERGY

To the Editor—I should like information on the value of the leukocyte count in detecting allergic reactions to foods. How great is the rise in a normal person after ingestion of 8 ounces of milk after a fifteen hour fast? How great a leukopenia signifies anything in an allergic reaction when given the inciting food? Do you know of any reliable test or article that can be obtained at this time? Should a food that causes an increase (from 100 to 400 per cent increase in the leukocyte count) be taken from a diet list? An increase seems to occur and is (thirty minutes) followed by an ill feeling, on the part of the patient.

M D Arkansas

ANSWER—Early French investigations on food anaphylaxis demonstrated that an acute reaction to allergenic food was accompanied by a pronounced fall in the leukocyte count (Widal and Joltrain). Vaughan believes that this leukopenic response to allergenic foods is a characteristic reaction in food allergy and may be employed in the identification of suspected foods. He believes that a drop of 1,000 or more below the fasting level following the ingestion of the test food is usually indicative of allergy. Three serial counts are made at intervals of thirty minutes following the ingestion of food. A rise in the leukocyte count is of no diagnostic significance.

Two questions have been raised concerning the reliability of this method. First, it has been suggested that blood counting cannot be performed accurately enough for a drop of 1,000; second, the leukocyte count to be significant. Second, the work of several investigators has suggested that normally, even without food ingestion, there is too wide a natural fluctuation in the leukocyte count level to make a drop of 1,000 significant. Recent work, however, appears to have invalidated the greater part of the criticisms. Ponder, Saslow and Schweizer (1931) have shown that, if sufficient cells in the chamber are counted (800) the normal blood leukocyte count remains reasonably constant. Bryan, Chastain and Garrey (1935) have shown that even with a smaller number (10 square millimeters on the cover slip) a chamber with blood diluted 1:20 counting may be accurately made to within 700 cells. Garrey and Bryan (1935) have reviewed the physiologic factors which influence the leukocyte count. These must be adequately controlled in the determination of the leukopenic index.

The existence of a normal digestive leukocytosis is a well known question. Garrey and Bryan conclude from a review of the various contributions on the subject that there appears to be evidence of a postprandial leukocytosis of low degree but that it is due to factors other than digestion itself, such as increased hydrochloric acid in the stomach, distention of the stomach, the presence of hot or cold substances in the organ.

Details concerning the technic of blood counting are given by W R Chastain, L and Garrey. *W J* 113 416 (Oct) 1935.

Details of the technic of the leukopenic index determined by Vaughan Warren. *J Lab & Clin Med* 21 1 1936.

Physiologic fluctuation in the true leukocyte count. Garrey W E and Bryan W R. *Physiol Rev* 15 1935.

ARTERIOSCLEROSIS OBLITERANS IN FEET

To the Editor—I have a patient a man aged 81 whose only abnormality is peripheral vascular occlusion of the toes and feet. There is no evidence of arteriosclerosis of other vessels as eye vessels and blood pressure and urine are normal. His principal complaint is painful red burning feet worse at night. There is no phlebitis and considering his age I consider it to be due to arteriosclerosis rather than to Buerger's disease. I should like information on the use of Padutin in this type of case. There is no intermittent claudication. Who makes Padutin and where is it available? Is it expensive? What is the present status of the passive vascular exercise machines in this type of case? Who makes these machines and what is their approximate cost?

M D Indiana

ANSWER—Burning distress in the feet may well be a symptom of decreased arterial circulation caused by arteriosclerosis. However, this symptom may result from other causes, such as peripheral neuritis. It is assumed that the correspondent's diagnosis of arteriosclerosis obliterans is based on the absence of or diminution of pulsations in the chief arteries of the lower extremities, on reduced temperature of the skin of the feet, and on abnormal rubor with dependence and abnormal pallor with elevation of the feet. However, even when such conditions are observed, the distress may be due either to ischemic neuritis produced by the diminished arterial circulation or to some other cause unrelated to the diminution of circulation. Padutin, which is an insulin free pancreatic extract manufactured by the Winthrop Chemical Company, 170 Varick Street, New York, is not useful in this particular situation but is of value only in the relief of the symptom intermittent claudication. There is no unanimity of opinion relative to the use of the alternating suction and pressure apparatus in treating arteriosclerosis obliterans. It is, however, quite apparent that the enthusiasm for machines of this type has waned decidedly since they were first placed on the market. Whether or not the correspondent's patient would be benefited by treatment with one of these machines could be determined only by trial. Approximately 100 hours of treatment should be given each extremity. The subject is reviewed by E V Allen and G E Brown in *THE JOURNAL*, Dec 21, 1935, page 229. Machines can be bought from the Cincinnati Scientific Company of Cincinnati, the Warren E Collins Company of Boston, the J H Emerson Company of Cambridge, Mass., or the Burdick Company of Milton, Wis. The cost varies with the type of machine purchased but most of them cost in the neighborhood of \$500.

MERCURIAL DIURETICS

To the Editor—1. In a patient with obstinate edema from progressive heart failure a mitral valve lesion and myocardial degeneration what would be considered absolute contraindication to the use of the mercurial diuretics? What is the influence of nephritis and low kidney function? 2. Has it been ascertained or is it accepted that salyrgan is less toxic than novasurol?

M D Arkansas

ANSWER—1. Although the clinical information given does not suffice for an accurate etiologic diagnosis of the cardiac disease, it may be stated that heart failure per se is certainly not an absolute contraindication to the use of the organic mercurial diuretics. It is assumed, however, that the patient has already received an adequate amount of digitalis, has been on a cardiac diet and has otherwise been given the full benefit of the accepted treatment for heart failure. It is generally agreed that patients with severe myocardial insufficiency should not be given mercurial diuretics before the ordinary measures have been instituted and found to be inadequate in ridding the patient of edema. Contraindications to the use of mercurial diuretics are acute or active (hemorrhagic) chronic glomerulonephritis, low renal function of any origin, e g, less than 30 to 40 per cent of the average normal urea clearance, inability to concentrate the urine to a specific gravity of 1.018 or higher, or an excretion of less than 25 to 30 per cent of phenolsulfonphthalein in two hours after intravenous injection of the dye, stomatitis ulcerative lesions of the gastro intestinal tract, or severe diarrhea known idiosyncrasy to the mercurial compound, acute or subacute hepatitis with jaundice, cachectic or marantic states, leukemia in the later stages, severe anemia especially if due to or associated with intestinal hemorrhage, recent coronary thrombosis or severe angina pectoris, failure to obtain diuresis, or the development of oliguria, increased microscopic hematuria or any other signs of mercury poisoning, after the injection of trial doses of the organic mercurial.

2. In spite of considerable investigation on men and laboratory animals, the comparative toxicity of salyrgan and merbaphen (novasurol) has not been clearly established. The clinical reports indicate that merbaphen is much more toxic than salyrgan. In fact the latter drug has almost entirely replaced the former in clinical use during the last few years. It should

be noted, however, that salyrgan was introduced after enough experience had accumulated in the use of merbaphen to teach physicians the proper indications, contraindications and dosage of this powerful drug. Hence fewer toxic reactions have resulted from the use of salyrgan. Experiments on rabbits showed only slightly more toxicity of merbaphen than of salyrgan (Johnstone, B I *J Pharmacol & Exper Therap* 42:107 [May] 1931). Both compounds produced renal lesions typical of poisoning with inorganic mercury. It is possible that the organic radical of merbaphen, apart from the mercury, may be responsible for some toxicity in man. There is no clearcut evidence at present.

LEUKORRHEA

To the Editor—A white woman aged 26 single weighing 105 pounds (48 Kg) has had a leukorrheal discharge for the past three years beginning with a slight discharge before and after each menstrual period. At that time she was examined by a physician smears were taken and there was no evidence of gonococci being found. She was given 10,000 potassium permanganate douches for approximately four months which did not seem to help at all. She was advised by another physician later to take Davegan tablets followed by a cleansing douche. This treatment was taken for a few months with no help. She went to another physician and was given quinine capsules as vaginal suppositories for *Trichomonas vaginalis*. This also did not help. Again on the advice of another physician she was advised to take diluted solution of sodium hypochlorite which seemed to help best of all. The patient came under my care approximately three months ago. At that time the Wassermann reaction was negative, catheterized urine specimens were negative, the red blood cell count was 4,500,000, the hemoglobin 90 per cent, the white blood cell count 14,400, polymorphonuclears 78 per cent, segmented forms 73 per cent, nonsegmented 75 per cent, lymphocytes 16 per cent, monocytes 6 per cent, and eosinophils 1 per cent. Three other white blood counts ranged from 12,000 to 15,000. There has been no elevation of temperature. On pelvic examination a medium sized speculum was inserted with comparative ease. There was first degree retroversion. The uterus was normal in size and consistency with no evidence of any erosions. There was a seropurulent discharge coming from the cervix. The entire vaginal vault was filled with a white foamy purulent discharge resembling that of *Trichomonas vaginalis*. The adnexa were completely normal. The vagina was red and inflamed with a very slight evidence of excoriation. Smears for gonococci were negative. Cultures taken on Sabouraud's medium were negative, agar nutrient medium 2 Hay bacillus colonies, beef of agar medium negative, bacteriophage culture medium negative, nutrient broth medium Hay bacillus. The patient was kept in bed for two weeks and given cleansing douches of salt and soda without any relief. April 9, 1937, the vaginal wall was washed with tincture of green soap. This was painful for the patient and on the following day when she came back for another treatment, the discharge had become white, thick and creamy. The vaginal wall was much too irritated for another treatment of this sort. Menstruation is regular with a profuse discharge and slight pain for the first two days. Kindly suggest diagnosis and treatment. Would you advise cauterization of the cervix?

M D Florida

ANSWER—*Trichomonas vaginalis* is mentioned a number of times in the query but there is no definite statement as to whether or not this organism was actually found. The simplest and cheapest way to find this out is to examine a drop of the discharge without any staining. A drop of saline solution is added to a drop of the vaginal discharge and the mixture is examined first with the low and then with a high power lens of a microscope. If trichomonads are present, they will be detected with ease because of their motility. The slide should also be studied for Monilia, especially because of the change in the discharge to a white, thick, creamy consistency after treatment with green soap. The appearance of the vagina may be due to excessive and perhaps rough treatment.

The cervix should by all means be treated if it is certain that the seropurulent discharge originates from this structure and is not simply some of the vaginal discharge deposited on the cervix and on the external os. One of the most satisfactory ways to treat the cervix is by means of the nasal tip electric cautery.

Not infrequently in cases in which it is difficult to cure a persistent leukorrheal discharge there is some constitutional disturbance. In some cases the administration of thyroid is distinctly helpful. However, before thyroid is given, it is advisable to have a basal metabolism study.

The treatment of *Trichomonas vaginalis* vaginitis is unsatisfactory chiefly because recurrences are common. Since the vagina is badly irritated at the present time it is best to use a dry form of treatment. With great gentleness the vaginal discharge should be removed with cotton pledgets. Then a powder should be blown into the vagina. Satisfactory results are being obtained with sodium methylmercaptosulfonaminohydroxyphenylarsenate, as recently described by Bland and Rakoff (*Am J Obst & Gynec* 32:835 [Nov] 1936, abstr *THE JOURNAL*, January 9, p 145). Biskind (*Lancet* 2:1049 [Nov 9] 1935) reported good results following the use of solutions of basic phenylmercuric nitrate. Silver picrate also is recom-

mended. It Monilia is found it can readily be eliminated by the use of gentian violet.

The physician should discuss with the patient the matter of cleansing herself after bowel movements. Many women use an upward sweep from the anus toward the vagina. If trichomonas gains access to the vagina from the rectum, as some individuals believe, such upward sweeping motions may produce reinfections. Patients should be instructed to use a sweeping motion directed away from the vagina and toward the sacrum.

CAUSES OF ACNE

To the Editor—In mild cases of acne vulgaris the following seems to be the sequence of events: 1 The skin becomes soft both subjectively and objectively. 2 The skin then becomes relaxed or toneless. 3 At this time it will be noticed that the pores are enlarged and comedones are apparent. 4 The skin assumes a blotchy appearance and the various forms and phases of the eruption appear. The basic change that seems to have occurred is the relaxation or loss of tone of the skin. If at any time some procedure is carried out that will prevent this relaxation or increase the tone of the skin the steps will reverse themselves and the skin tend to clear except for the comedones or pustules that have developed too far. Three procedures that tend to do this are: 1 Application of medicaments containing sulfur, resorcin and so on. 2 Application of ultraviolet rays or sunshine. This must be intense enough to cause a sunburn and the effect is of value only when this reddening sunburn is present in other words when and while the patient actually feels the burn. After the skin becomes tanned the treatment is much less effective or entirely ineffective. Here it will be noted that when the treatment is effective the patient has the feeling that his skin is drawn tight across his face. Examination will reveal the pores to be very small. Under the optimal conditions this treatment will change the course of events and the appearance of the skin over a period of six hours. 3 Application of cold—rubbing ice on the face exposing the face to cold winds and the like. Here also the patient will have the feeling that the skin is drawn tight on his face and it will be noted that the pores of the skin are small. However, under optimal conditions this is not as effective as the ultraviolet rays or sunshine. It is this last observation about which the present communication is concerned—the prophylactic and therapeutic effect of cold on acne vulgaris and its relation to the physiologic cause of the condition. It would seem that the accuracy of this observation might be determined in part at least by determining the prevalence of acne vulgaris in the arctic and antarctic circles. (I have never seen a picture of an Eskimo with this condition.) Some of the statements that I have made are subject to dispute but they are stated dogmatically to develop the point more easily.

E. W. GROVE, M.D., Gainesville, Ga.

ANSWER—The discussion of the factors in the genesis of acne on the basis of the correspondents' observations is interesting.

The soft, relaxed, toneless skin seen in acne is usually a part of the sluggishness that exists in some of these affected persons at the age of adolescence because of sedentary habits, dietary indiscretions and certain underlying endocrine factors. Any application that tends to combat or alter these factors is usually associated with some degree of improvement. The application of stimulating local applications containing sulfur and resorcinol, the use of erythema doses of ultraviolet rays, or exposure to the sun tends to have a stimulating effect with associated increase in circulation of the skin of the face. The application of cold, because of its astringent effect and subsequent hyperemia, produces the general effects described. Contrast applications with hot and cold water associated with brisk rubbing of the face, have long been a part of the regimen of therapy in the hands of many.

The type of life led by the inhabitants of the arctic is one of great physical activity in which the people alternate between fast and famine. The diet includes meat and fish of various types obtained from the uninhabited regions, which is usually eaten raw. "Contrary to general opinion the Eskimo eats relatively little fat or blubber" (Thomas W. A. Health of a Carnivorous Race: A Study of the Eskimo, THE JOURNAL, May 14, 1927, p. 1559).

A vigorous life with exposure to the elements and the lack of certain excesses in diet is an important contributory factor in the absence of an acne soil in the Eskimo.

GASTRO PHOTOGRAPHY

To the Editor—I would appreciate your opinion of the Gastro Photo which has been exhibited at the annual session of the American Medical Association and also some of the state meetings.

W. L. CASLER, M.D., Marquette, Mich.

ANSWER—Many attempts have been made to develop a direct, anatomic diagnostic procedure for gastric lesions. Three methods exist at this time: (1) the x-ray relief method with compression; (2) gastroscopy; and (3) gastrophotography. The x-ray relief method developed by Heilpern and Schindler has been shown to be of great value especially in the diagnosis of gastric

ulcer and tumors, but the smaller lesions, especially the diffuse forms of gastritis and small superficial ulcerations, often cannot be demonstrated in this way. Gastroscopy developed slowly from 1868, became a safe procedure with the use of the flexible gastroscope in 1932. The results are excellent. The method should not be confused with open tube procedure such as esophagoscopy. Gastrophotography was initiated first by Lange of Munich in 1898 and reached a certain perfection with the construction of the "gastrophotor," by Back and Heilpern of Vienna in 1929. A small photographic camera, containing eight films which are exposed through 'pinhole' openings without lenses, and a lamp are introduced into the stomach. A quick exposure of the eight films is made by pressing a button and thus illuminating the mucosa by the powerful lamp. The results of the three methods have been compared by three gastroscopists, Henning, Moutier and Schindler. All three agree on the great value of the x-ray relief and gastroscopic methods, both of which are considered indispensable and supplementary to each other. On the other hand, these three authors unanimously reject gastrophotography for a number of reasons, the most important of which are: (a) the pictures often are blurred; (b) a real orientation within the stomach is impossible; and (c) the important color changes in the mucosa are not reproduced in the black and white film. Gastrophotography apparently is carried out in a routine way only by Heilpern in Philadelphia, Heilpern in Vienna, Bernay in Lyons and Hofmann in Buenos Aires, while the other two methods are carried out in many hospitals and clinics all over the world.

SURGERY IN AMYOTROPHIC LATERAL SCLEROSIS

To the Editor—A patient with diabetes always under control for seven years developed two years ago a spinal lesion situated just above the sixth dorsal rib and manifested by great pain in the extremities. All tests (x-ray, lipid injection, Queckenstedt's test) were negative and failed to reveal the exact nature of the trouble—whether tumor or hemorrhage. Three months ago she began to display all the symptoms of hyperthyroidism: pulse 120 and the basal metabolism reaching plus 60 per cent. Simultaneously the neurologist changed his diagnosis from a spinal lesion to probable amyotrophic lateral sclerosis. Compound solution of iodine and two months of rest brought the pulse down to 100 and the basal metabolism to plus 35 per cent. A thyroidectomy, or at least a lobectomy, was considered but it was opposed on the ground that patients with spinal disease, especially amyotrophic lateral sclerosis, cannot withstand the strain of even the most minor operation and usually die. Accordingly as a last resort two x-ray treatments were administered. Although the metabolic rate fell to plus 26 per cent the causal connection between the x-ray treatments and the drop in basal rate is questionable. The problem of the feasibility of a lobectomy has arisen again. Can you throw any further light on the risk involved? The patient who is about 60 years old but little if any weight prior to the onset of the hyperthyroidism and has lost about 30 pounds (13.6 Kg.) since. If an operation is decided on what anesthetic in view of the inadvisability of using a spinal anesthetic would you suggest?

SAUL MEBEL, M.D., New York

ANSWER—There is no known evidence that amyotrophic lateral sclerosis is a contraindication for surgical intervention. In this case the only contraindication would be the diabetes. If the latter was well controlled, surgery could be done. Amyotrophic lateral sclerosis is one of the most common causes of true bulbar palsy. When bulbar palsy exists, any anesthetic other than local would be a potential danger because in bulbar palsy the circulatory, respiratory and deglutition functions are defective and anesthesia might make them worse. If the patient has no signs of bulbar palsy, local nitrous oxide gas, ether or ethylene anesthesia may be used.

METHYL CHLORIDE POISONING

To the Editor—What is the latest treatment for poisoning from methyl chloride in refrigerators? M. D. ASTORIA, O.

ANSWER—The injury produced in methyl chloride poisoning may represent a profound asphyxiation if the exposure is severe or it may be substantially the same as that caused by methyl alcohol if the patient escapes or survives asphyxiation. In asphyxiation, the patient should be removed from further exposure and if respiration has ceased but the victim is still alive, artificial respiration should be carried out. The use of oxygen with or without the addition of 5 or 7 per cent carbon dioxide may be indicated. The objective in this phase of the treatment naturally is to remove from the lungs all possible methyl chloride.

Methyl chloride taken into the body is decomposed into methyl alcohol and hydrochloric acid. Hydrochloric acid combines with mineral salts in the blood to form such compounds as sodium and potassium chlorides which are relatively innocuous and as a result these salts do not enter into general poisoning. The treatment for poisoning from

chloride then becomes the same as for poisoning from methyl alcohol. A primary objective is to combat acidosis. In acute situations, intravenous administrations of an alkalizing solution are in order. Administration by mouth and by rectum of similar substances are advised. Enemas of 3 per cent sodium bicarbonate with 5 per cent dextrose solution have been utilized. At times sedatives may be required because of convulsive attacks, but more often respiratory and cardiac stimulants may be applied. The chief points of injury are likely to be the kidneys, the liver and the central nervous system, including the optic nerves. For their protection, treatment should be directed to the prompt elimination of the methyl alcohol, which is discharged from the body much less readily than ethyl alcohol.

ABDOMINAL CRISES

To the Editor—A German aged 50 well developed and of good nutrition for the past thirteen years has had recurring attacks of pain in the right upper quadrant of the epigastrium. These pains start gradually and increase in intensity for about four to six hours until they are severe and then gradually subside. They are gone in from eighteen to twenty-four hours leaving him in perfect health again. While the pains are present they are constant and are relieved only by opiates. The interval between attacks has always been well defined. At first it was about twenty days. A few years ago it changed to eleven days and at present it recurs at nine day intervals. The patient can predict the day on which it will come. During the years of his illness he has been seen by numerous gastro-enterologists. He has been roentgenographed and given gastric function tests. All tests were negative. The Wassermann reaction was negative. Nevertheless on one occasion several years ago a surgeon was convinced that the trouble lay in the gallbladder. He did a cholecystectomy. The pains continued as before. Physical examinations show no tenderness or other abnormalities. The man was told by several gastro-enterologists that nothing could be done for him. Have you any suggestions to offer?

M D New York

ANSWER—It is impossible to arrive at an exact diagnosis from the evidence presented. In spite of the fact that the Wassermann reaction was negative, it might be interesting to know the results of the Kahn reaction of the blood and the serologic reaction in the spinal fluid. These abdominal crises are not at all uncommon in syphilis and malaria and often have been known to occur as abdominal manifestations of epileptiform seizures. In the latter connection, these attacks are frequently relieved by putting the patient on a ketogenic diet and giving small doses of phenobarbital. Other than that there are no suggestions to be made.

NONSPECIFIC URETHRITIS

To the Editor—Two evenings ago a patient had had intercourse with his wife for the first time in two weeks. He used a condom, known as "Gold Tex." Shortly after the emission he noted some burning within the urethra. The next day it was worse. That evening (the one following the intercourse) he noted some white discharge. This was greater in amount the following day. Examination showed pus on the end of the penis. The first glass was cloudy with shreds the second clear with shreds. Microscopic examination showed many pus cells with no organisms on two successive days. He stated that he had not had extramarital contact during the past year. There is no previous history of infection. He had used four of the same type prophylactics two weeks previously without difficulty. This type condom has what looks like yellow or gold powder at the tip (inner). After three days treatment the pus disappeared. Although the first glass appeared slightly cloudy with shreds burning on micturition had ceased. Are there any records of a nonspecific urethritis caused by Gold Tex condoms? Does this not appear more of a nonspecific than a gonorrheal urethritis?

M D Connecticut

ANSWER—If the gonococcus could not be demonstrated in this case, it is evidently a case of nonspecific urethritis. Rubber condoms may be the cause of dermatitis, balanitis and nonspecific urethritis. The people who develop these conditions are those who are sensitive to rubber. Such cases have been reported in the literature (Obermayer, M E. *Eczema Due to Hypersensitivity to Rubber*, *Arch Dermat & Syph* 17:25 [Jan] 1933; Rattner, Herbert. *Dermatitis of the Penis from Rubber* *THE JOURNAL*, Oct 12, 1935, p 1189).

IODIDES IN TUBERCULOSIS—RAISING ARMS IN TUBERCULOSIS

To the Editor—Two questions in tuberculosis. 1. Is the aversion to iodides sound or is it based on the questionably analogous action in gummas? 2. Some men forbid patients to raise their arms above the head. Is this sound or a fetish based on faulty anatomical reasoning?

M D New York

ANSWER—1. Considerable doubt has arisen in the minds of physicians as to whether iodides in usual dosage have any deleterious effect on the lesions of pulmonary tuberculosis. At one time the iodides were used extensively in the diagnosis of pulmonary tuberculosis that is when tubercle bacilli could not be recovered from the sputum large doses of iodides were

administered, following which in some cases tubercle bacilli appeared in the sputum. The conclusion was drawn that the iodides broke down the lesions and liberated bacilli. As these drugs serve as expectorants by increasing and liquefying the secretions in the bronchial tree, it seems probable that they only resulted in liberation of mucus and other materials from the region of the lesion in which bacilli could be demonstrated. The fear of the administration of iodides to tuberculous patients has definitely decreased in the past few years.

2. There is also considerable doubt whether forbidding patients to raise their arms above the head has any sound basis. The most that can happen by bringing the arms to this position is a slight elevation of the ribs to which the pectoral muscles are attached but this probably is not as great as, or certainly no greater than, the elevation of the ribs on ordinary inspiration. Like a number of beliefs with no scientific basis, coincidence was probably responsible for this one. For example, a patient may have a pulmonary hemorrhage begin while the arms are above the head and the conclusion is immediately drawn that it was this position which resulted in the hemorrhage, when in reality it would have occurred regardless of the position of the arms.

DERMATITIS FROM HAIR DYE

To the Editor—A middle aged woman about nine years ago and again recently developed a dermatitis following the use of hair dye to blacken her hair. The first time both eyes were swollen and the scalp was red but the condition did not last long. The last time within twenty-four hours after visiting a beauty parlor her scalp began to itch and burn and her eyes began to swell which progressed to complete closure of both eyes. This condition lasted about twelve hours. During this time her scalp was red and edematous the edema and redness extending below the hair line and down the back of the neck. I saw her again yesterday, ten days after the dye was applied and the scalp in spots and all around the hair line extending over the temples and the back of neck was cracked and there were dry crusts between with serum pouring from the cracks. I have used hot physiologic solution of sodium chloride and calamine lotion after an initial shampoo to begin with. The eyes are still a bit puffy but otherwise the physical examination including urinalysis was negative. She does not recall the brand of the hair dye she first used, but the last was called Cloral Hair Dye made or distributed from Danville Ill. She is anxious to avoid a repetition of this experience and I should like to know what was probably the causative drug or drugs. Her general health is good and she shows no allergic symptoms.

M D Indiana

ANSWER—The common offender in hair dyes is paraphenylenediamine, an efficient black dye. No information as to the composition of "Cloral" dye is obtainable. The patient to avoid future trouble, will have to stop dyeing her hair. Hairdressers cannot be depended on to know what is in the dyes, and paraphenylenediamine is so much more satisfactory than any other dye that she is sure to have it used again if she continues having her hair dyed.

VARICOCELE

To the Editor—Kindly outline the present day treatment of varicocele. Is operation performed as much as formerly? If so what is the type of operation? To what extent is varicocele a bar to employment in industry? Is it now considered a forerunner of hernia?

M D Minnesota

ANSWER—A varicocele is not operated on frequently. It occurs in adolescence and its symptoms, which may be to a certain extent mental, usually subside in a few years. Varicocele usually occurs on the left side but it is occasionally bilateral and when associated with a long dependent scrotum may produce some disability in an active person. In certain industries requiring considerable activity or standing it would be considered a handicap. This would depend on the degree of enlargement of either the varicocele or the scrotum and the symptoms produced, together with the type of work demanded.

Varicocele is not considered as predisposing to hernia. The development of a varicocele in an older man on the left side should lead one to suspect pressure or neoplasm in the region of the kidney involving the internal spermatic vein, which empties into the left renal vein. Operation for varicocele should never be done at the same time as a hernia operation unless one understands the danger of postoperative atrophy of the testicle from pressure about the remaining veins in the inguinal canal after resection of a portion of the varicose veins. Atrophy is not likely to occur when the operation is limited to the resection of a short segment of only a part of the varicose veins and approximation of their ends to aid suspension of the testicle. The lower portion of a long redundant scrotum may be resected at the same time, but great care should be taken to control bleeding. Following operation there should be no physical disability or handicap in heavy labor.

ECTHYMA OR FACTITIOUS DERMATITIS

To the Editor—Can you offer any suggestion as to the possible cause of a peculiar lesion on a school girl aged 15 years which first appeared to be a blister from a burn then looked mildly infected and was dressed with moist antiseptics but took nearly a month to form a firm crust? This after five weeks appears as a punched out nearly healed ulcer three fourths inch across with a black hard slightly depressed covering. She had a similar smaller lesion on the forearm a year or so ago which ran a similar course and the same indefinite history of a burn to account for it. She is in good health and has no skin disease of any kind. The only examination was of the urine which was negative for sugar, albumin, and casts or cells. PAUL W. VANMETRE, M.D., Rockwell City, Iowa.

ANSWER—The lesion described suggests the diagnosis of ecthyma. The possibility of a dermatitis factitia (self-induced eruption) must also be considered.

Treatment of ecthyma consists in removal of the crusts and the application of 3 per cent ammoniated mercury to the base of the ulcer. Daily painting with 3 per cent aqueous solution of gentian violet is also effective. The description of the origin of the lesion strongly suggests the possibility of an external irritant as a causative factor while this irritant may result from contact, the possibility of dermatitis factitia in a girl of 15 deserves consideration. Close observation and the use of a fixed occlusive dressing should rule this out.

MENIÈRE'S DISEASE

To the Editor—I am suffering from Meniere's disease. I had the first attack some twenty odd years ago. It lasted an hour or so and was relieved by a narcotic. Since then it has come about once or twice a year. For the last three weeks it has been with me day and night. I have a constant roaring in my left ear. I am deaf and cannot move my eyes without holding on to something for support else I fall. Please help me. All the remedies suggested by Nebraska specialists have not benefited me. I am 76 years old. MD Nebraska.

ANSWER—There are at least two types of treatment for Meniere's disease, medical and surgical. The medical treatment of his condition is well described by Madelaine R. Brown (*THE JOURNAL*, April 3, p. 1158). The surgical treatment consists of resecting the vestibular branch of the eighth nerve. This operation is especially recommended by Dandy. While there is some dissenting opinion as to the efficiency of surgical intervention, in this particular instance with the symptoms as severe as described, and granted that the diagnosis is correct and that the treatment so far is modern resection of the vestibular portion of the eighth nerve under local anesthesia would appear to be a proceeding that offers the most hope and with no undue risk, even considering the age of the patient.

IODIDES IN RESPIRATORY INFECTIONS

To the Editor—Will you render me a critical opinion regarding the use of iodides in the treatment of acute respiratory infections? There is a tendency on the part of many physicians to use calcium iodide (calcidin), sodium iodide, organiodin, hydriodic acid and the like during the acute phases of respiratory infections. Is this sound therapy? Some investigators seem to feel that iodine may increase edema and dissolve nature's protective barriers and that its use should be withheld until the afebrile period when it may aid in promoting absorption of the residue. I have felt that iodine may be harmful if not judiciously used. MD California.

ANSWER—It is perfectly correct that iodides are not suitable in acute stages of infections of the upper respiratory tract as they are likely to aggravate existing congestion and irritation. They are even charged with the tendency possibly to produce glottis edema when given in such cases. It is in subacute and most especially in chronic conditions that iodide is so very useful.

ATROPHY OF TESTIS

To the Editor—I am 27 years of age. Five years ago a herniotomy for a right sided inguinal hernia caused complete atrophy of the right testicle. Six weeks ago a herniotomy on the left side resulted in an epididymo-orchitis. At the present time the left testicle is slightly smaller than it was prior to operation is extremely hard and is not tender even to excessive pressure. What is the prognosis as to atrophy? If it does atrophy what treatment surgical or medical will prevent or alleviate the results of castration? MD Massachusetts.

ANSWER—Since there are varying degrees of postoperative atrophy of the testicle which is rarely bilateral one cannot predict the extent of loss of function without further studies on the presence of hormone and permanent under these conditions.

Atrophy of the testicle with following a traumatic or infectious etiology the interstitial cell concentration should not occur and the

following involve testicular

At the meeting of the Chicago Society of Internal Medicine, January 25, Fred C. Koch reported a rapid method for quantitative extraction of the sex hormones in normal men and women.

The presence of an epididymitis would temporarily and perhaps permanently prevent the passage of spermatozoa even in the present.

One should search for spermatozoa and, if absent for some time following a preexisting epididymitis, surgical anastomosis of the efferent ducts of the testicle or the lobules of the epididymis to the ductus deferens on that or even the opposite side might be performed to short circuit an obstructed segment. Spermatozoa can be found above it at operation or by aspiration of a spermatocele.

DANGERS OF BUTYN IN URETHRA

To the Editor—E. B., aged 40, colored, was admitted to the hospital for treatment of acute retention due to multiple urethral strictures. General physical examination was entirely negative otherwise. Attempts to catheterize with metal and rubber catheters were in vain and there was considerable trauma attendant on such attempts. However, the patient succeeded in voiding following the use of prolonged sitz baths. The following day a large amount of 4 per cent butyn (10-15 cc) was injected with some force into the urethra and a bougie was inserted but could not be made to pass the final stricture. On the next day immediately following a hot sitz bath an hour long the injection of 1 drachm (4 cc) of 4 per cent butyn resulted almost immediately in convulsions of a generalized clonic type which subsided only to be resumed again in a few minutes. Breathing became increasingly difficult, the lungs filling with a moisture and the patient died in less than five minutes. The blood nonprotein nitrogen immediately after death was 29 mg. and spinal fluid also withdrawn immediately after death showed no cells or globulin and the Kahn and Wassermann reactions were negative. Permission was not obtained for a postmortem examination. Please let us know your opinion of this case. MD.

ANSWER—Butyn is more toxic than certain of the other local anesthetics, the fatality in this case, however, should not be attributed to butyn any more than to another local anesthetic that might have been administered. The Council on Pharmacy and Chemistry and *THE JOURNAL* have warned against the use of local anesthetics in the presence of trauma many times. The circular issued by the Abbott Laboratories and accepted by the Council contains the following statement: "IN GENITO-URINARY SURGERY When trauma exists the use of any local anesthetic is contraindicated."

ATOPIC ECZEMA

To the Editor—I have under my care a child aged 2 years who has had an eczema-like skin eruption almost since birth in the region of the elbows and in both inguinal regions. On physical examination the patient is a perfect specimen of health. All laboratory examinations have been negative. The patient comes from healthy stock with a history of allergy on the mother's side. A thorough skin testing of the child with all material available shows very strong reactions to the different kinds of nuts. While the patient has never eaten according to the parents who are very careful and intelligent. Could this chronic eczema have anything to do with the child's sensitiveness to nuts? If not what would you advise as to the proper procedure in treating this condition? MD Kansas.

ANSWER—With the hereditary, allergic background, and an eruption of "eczema-like" character, this case is most probably an atopic eczema. Even though the patient does not eat nuts, the presence of related nut substances in vegetable fats (margarine, coconut oils, and the like) may be a source of nut substances. The complete elimination of anything that may contain nuts or their derivatives in view of the patient's positive reaction must be assured. A regimen with careful diet elimination should be instituted. Soothing local application, ultraviolet exposures and dicalcium phosphate by mouth together with vitamins A and D, constitute a valuable adjunct to other management.

HEMOSTATICS IN HEMORRHAGE

To the Editor—Will you please inform me as to the value of fibrinogen (Cutter's) or similar products in the control of hemorrhage in the lung caused by injury to the chest in an automobile accident? What is the opinion as to the value of calcium chloride intravenously in a case to arrest hemorrhage? The patient prior to the accident was perfectly well, young adult.

ANSWER—Pickering and Hemmingway demonstrated that question that hemostatics definitely shorten the coagulation time of shed blood. This does not prove, however, that the reabsorption of shed blood is of increased value in closing bleeding vessels. In fact, Graham makes no mention of the use of drugs in the care of intrathoracic hemorrhage resulting from trauma. It is well established that in the normal healthy person, loss of blood itself decreases coagulation time and that drugs are of relatively

insignificant value. Although coagulation of blood depends on the action of calcium ions on prothrombin, producing thrombin, there is ample mobile calcium in the normal person so that additional calcium is unnecessary. Intravenous injection of calcium salts carries with it some danger of unfavorable cardiac action.

Transfusion of blood from a suitable donor is the best treatment in such cases, as it provides human coagulating substances in addition to fluid volume and erythrocytes.

CALCIUM DEPOSITS IN TISSUES

To the Editor—A patient while confined to a hospital was given an intravenous injection of calcium chloride in the arm by an attending intern. The solution went outside the vein and infiltrated the surrounding superficial and deep tissues. After the inflammatory reaction subsided the result was an ugly red scar and multiple lumps of hard calcareous deposits in the tissues. Will you please inform me as to whether there is a way to dissolve the calcium lodged in the tissues and if there is a possibility of its being absorbed in time.

M D Washington

ANSWER—No satisfactory method has been devised for successfully dissolving adventitious calcareous deposits in the soft tissues. Resorption over a long time is possible, but encapsulation is the more common method of foreign body segregation—another reason for the failure of solvents.

The treatment advised after accident is multiple stab punctures and small incisions as soon as possible, attempting to massage the chemical irritant out of the tissues followed by hot applications of magnesium sulfate. Injection of salt solutions to dilute the chemical is not practical, since the original route of the infiltrating calcium chloride solution cannot be retraced. In addition, the mechanical edema further embarrasses the normal attempts at resorption. In the late stages, after scar and nodule formation, plastic surgery is the only resort.

LATE TREATMENT OF BURNS

To the Editor—A patient who was severely burned about the face and hands—second and third degree burns—has had complete epithelization but still a great deal of redness in the burned area. Since the termination of the wax dressings I have been using olive oil and hydrous wool fat locally. The burn is now eight weeks old. What would you suggest to keep the skin soft? Can anything be done to reduce the redness or will this persist until the skin becomes thicker? Some time ago you published a formula for a scarlet red ointment to stimulate epithelization. Will you please repeat this?

M D Pennsylvania

ANSWER—Redness in the healed area following second and third degree burns has a tendency to disappear in time. Keeping the skin soft with olive oil and hydrous wool fat tends to improve the general condition of the superficial scar tissue and the epithelium. Compresses of boric acid solution applied several hours daily have a tendency to reduce the incidence of local infections which may occur in small fissures. X-rays should not be used in an effort to hasten the disappearance of redness in such areas. There is a difference of opinion as to the value of X-rays in the treatment of keloids. Some dermatologists and radiologists consider them of great value. When used, the treatment should be carefully supervised. Scarlet red is usually applied as a 5 per cent ointment.

GOLD BRIDGEWORK TURNING BLACK

To the Editor—A patient employed as a domestic is apparently in good health but complains that gold bridgework recently applied turns black rapidly. What are the possible causes of such a condition and how may it be remedied?

M D New York

ANSWER—The 'gold' bridgework is probably made of a low carat gold. It may be remedied by the use of a higher carat gold.

ZINC IONIZATIONS FOR VASOMOTOR RHINITIS

To the Editor—What is the clinical value of zinc ionizations for vasomotor rhinitis?

M D New Jersey

ANSWER—Zinc ionization has been recommended for vasomotor rhinitis, and while there are favorable reports there are also many disappointments. Recently reports have appeared from men of good standing indicating that the method may be a severe one, its results are not specific, they depend on the production of local changes of a caustic type in the nasal mucous membrane and very late unfavorable after-effects are still to be looked for.

References

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Dean L W and others. Allergic Rhinitis. *ibid* 45: 101 (March) 1936.

Medical Examinations and Licensure

COMING EXAMINATIONS

STATE AND TERRITORIAL BOARDS

ALABAMA	Montgomery	June 28	Sec Dr J N Baker	519 Dexter Ave
ALASKA	Juneau	March 1	Sec Dr W W Council	Box 561
ARKANSAS	Medical (Regular)	Little Rock	Dec 21 22	Sec Dr L J Kosminsky Texarkana Medical (Eclectic) Little Rock Dec 21
Sec Dr Clarence H Young	1415 Main St	Little Rock		
COLORADO	Basic Science	Denver	Dec 15 16	Sec Dr Esther B Starks 1459 Ogden St Denver Medical Denver Jan 5 7
Sec Dr Harvey W Snyder	831 Republic Bldg	Denver		
CONNECTICUT	Basic Science	New Haven	Feb 12	Prerequisite to license examination Address State Board of Healing Arts 1895 Yale Station New Haven
DELAWARE	Dover	July 12 14	Sec Medical Council of Delaware	
Dr Joseph S McDaniel	229 S State St	Dover		
DISTRICT OF COLUMBIA	Basic Science	Washington	Dec 27 28	Medical Washington Jan 10 11
Sec Dr George C Ruhland	203 District Bldg	Washington		
GEORGIA	Atlanta	June	Joint Sec State Examining Boards	Mr R C Coleman 111 State Capitol Atlanta
IDaho	Boise	April 5 6	Commissioner of Law Enforcement	Hon J L Balderston 205 State Capitol Bldg Boise
ILLINOIS	Chicago	Jan 25 27	Superintendent of Registration	Department of Registration and Education Mr Homer J Byrd Springfield
INDIANA	Indianapolis	June 21 23	Sec Board of Medical Registration and Examination	Dr J W Bowers 301 State House Indianapolis
IOWA	Basic Science	Des Moines	Jan 11	Sec Dr W L Strunk Decorah
KANSAS	Topeka	Dec 14 15	Sec Board of Medical Registration and Examination	Dr J F Hassig 905 N 7th St Kansas City
MARYLAND	Medical (Regular)	Baltimore	Dec 14 17	Sec Dr John T O Vora 1215 Cathedral St Baltimore Medical (Homeopathic) Baltimore Dec 14 15
Sec Dr John A Evans	612 W 40th St	Baltimore		
MINNESOTA	Basic Science	Minneapolis	Jan 4 5	Sec Dr J Charney McKinley 126 Millard Hall University of Minnesota Minneapolis Medical Minneapolis Jan 18 20
Sec Dr Julian F Du Bois	350 St Peter St	St Paul		
MONTANA	Helena	April 5 6	Sec Dr S A Cooney	205 Power Block Helena
NEBRASKA	Basic Science	Omaha	Jan 11 12	Dir Bureau of Examining Boards Mrs Clark Perkins State House Lincoln
NEVADA	Reciprocity	Carson City	Feb 7	Sec Dr John E Worden Capitol Bldg Carson City
NEW HAMPSHIRE	Concord	March 10 11	Sec Board of Registration in Medicine	Dr Fred E Clov State House Concord
NEW JERSEY	Trenton	June 21 22	Sec Dr James J McGuire	28 W State St Trenton
NEW MEXICO	Santa Fe	April 11 12	Sec Dr Le Grand Ward	135 Sena Plaza Santa Fe
NEW YORK	Albany	Buffalo New York and Syracuse	Jan 24 27	June 27 30 and Sept 19 22 Chief Professional Examinations Bureau Mr Herbert J Hamilton 315 Education Bldg Albany
NORTH DAKOTA	Grand Forks	Jan 4 7	Sec Dr G M Williamson	4 1/2 S 3rd St Grand Forks
PENNSYLVANIA	Philadelphia	Jan 4 8	Sec Board of Medical Education and Licensure	Dr James A Newpher 400 Education Bldg Harrisburg
RHODE ISLAND	Providence	Jan 6 7	Chief Division of Examiners	Mr Robert D Wholey 366 State Office Bldg Providence
SOUTH DAKOTA	Pierre	Jan 18 19	Director of Medical Licensure	Dr B A Djar Pierre
TENNESSEE	Memphis	Dec 22 23	Sec Dr H W Qualls	130 Madison Ave Memphis
VERMONT	Burlington	Feb 8	Sec Board of Medical Registration	Dr W Scott Noy Underhill
WISCONSIN	Madison	Jan 11 14	Sec Dr Henry J Gramling	2203 S Layton Blvd Milwaukee
WYOMING	Cheyenne	Feb 7	Sec Dr G M Anderson	Capitol Bldg Cheyenne

NATIONAL BOARD OF MEDICAL EXAMINERS SPECIAL BOARDS

Examinations of the National Board of Medical Examiners and Special Boards were published in THE JOURNAL December 4 page 1931

Ohio June Examination

Dr H M Platter, secretary, Ohio State Medical Board, reports the oral, written and practical examination held at Columbus, June 1-4, 1937. The examination covered 10 subjects and included 80 questions. An average of 75 per cent was required to pass. Two hundred and ninety-six candidates were examined, 291 of whom passed and 5 failed. The following schools were represented:

School	PASSED	Year Grad	Per Cent
University of Colorado School of Medicine	(1936)		87.8
George Washington University School of Medicine	(1936)		84.2
(1936) 82.9 (1937) 83.9			
Georgetown University School of Medicine	(1936)		82.8
Loyola University School of Medicine	(1937)		78.5
81.2 81.4 * 81.5 81.9 * 86.3 * 86.4 *			
Northwestern University Medical School	(1937)		80.7

Rush Medical College (1936) 846 (1937) 82 831 838	(1935)	81 2
School of Medicine of the Division of the Biological Sciences	(1937)	82 6
Harvard University Medical School (1936) 846 (1937) 858 866	(1932)	85 4
University of Nebraska College of Medicine	(1932)	82 5
Columbia University College of Physicians and Surgeons	(1937)	84 3
New York Medical College and Flower Hospital	(1937)	83 7
University of Rochester School of Medicine	(1937)	81 9 83 6
Eclectic Medical College Cincinnati 79 5 79 8 80 2 81 81 3 81 6 82 9 83 4 83 9 84 1 84 3 84 3 84 7 85 4 85 6 85 8 86 1 86 2 86 4 86 7 87 5 87 9	(1937)	78 2

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University of Cincinnati College of Medicine 78 6 79 3 80 1 80 7 81 81 81 81 6 81 7 81 7 81 9 82 82 2 82 5 82 6 82 7 82 8 82 9 83 83 1 83 1 83 2 83 2 83 2 83 5 83 6 83 6 83 8 83 8 83 8 83 9 83 9 83 9 83 9 84 84 84 84 84 84 3 84 4 84 6 84 6 84 7 84 8 84 9 84 9 84 9 85 2 85 2 85 5 85 8 86 86 1 86 6 86 6 87 5 87 5 88 89 89 1 90 6 (1917) 80	(1937)†	78 6
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Western Reserve University School of Medicine 79 4 79 7 80 3 80 6 80 8 81 2 81 3 81 5 81 5 81 7 81 7 81 7 81 8 81 9 82 82 82 1 82 1 82 2 82 2 82 3 82 6 82 6 82 8 83 83 1 83 2 83 2 83 3 83 3 83 3 83 4 83 4 83 4 83 5 83 9 83 9 83 9 84 84 1 84 2 84 3 84 4 84 5 84 8 84 8 85 85 85 1 85 4 85 4 85 5 85 8 86 4 86 6 86 9 87 3 87 6 88 1 88 3 88 6	(1937)	76
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Hahnemann Medical College and Hosp of Philadelphia (1936) 81 5

Jefferson Medical College of Philadelphia (1935) 84 1

Temple University School of Medicine (1936) 78 5

University of Pennsylvania School of Medicine (1937) 84 2

Meharry Medical College (1909) 75 7

Marquette University School of Medicine (1937) 78 4

Dalhousie University Faculty of Medicine (1937) 81 4

University of Toronto Faculty of Medicine (1935) 82 6

Albert Ludwigs Universität Medizinische Fakultät Freiburg (1924) 83 88

Hessische Ludwigs Universität Medizinische Fakultät Gießen (1918) 79 48

Universität Heidelberg Medizinische Fakultät (1927) 80 98

Universität Leipzig Medizinische Fakultät (1925) 75 48

Regia Università degli Studi di Palermo Facoltà di Medicina e Chirurgia (1936) 758

Université de Lausanne Faculté de Médecine (1936) 77 48

School Year Grad Per Cent

Medizinische Fakultät der Universität Wien (1932) 70 28

Medizinische Universität Medizinische Fakultät Prag (1931) 71 88

Medizinische Universität Medizinische Fakultät Freiburg (191) 718

Ludwig Maximilian Universität Medizinische Fakultät Würzburg (1918) 71 98

University of Dublin School of Medicine Trinity College (191) 73 48

This applicant has completed the medical course and will receive the M.D. degree on completion of internship within 12 months of diploma reviewed

† License withheld until internship is completed

‡ These applicant have received the M.D. degree on completion of internship

Verification of graduation in process

North Dakota July Report

Dr G. M. Williamson Secretary North Dakota State Board of Medical Examiners reports the oral written and practical examination held at Grand Fork July 6-9 1937. Seven candidates were examined all of whom passed. Four physicians were licensed by reciprocity and ten physicians were licensed by endorsement. The following schools were represented:

School	Year Grad	Per Cent
Harvard University School of Medicine	(1937)	82 6
Rush Medical College	(1937)	85 4
University of Minnesota School of Medicine	(1937 4)	82 5
University of Wisconsin School of Medicine	(1933)	82 5
University of Illinois College of Medicine	(1932)	82 5
State University of Iowa College of Medicine	(1927)	82 5
University of Kansas School of Medicine	(1930)	82 5
University of Louisville School of Medicine	(1936)	82 5
Johns Hopkins University School of Medicine	(1913)	82 5
Harvard University Medical School	(1933)	82 5
University of Minnesota Medical School	(1932)	82 5
St. Louis University School of Medicine	(1933)	82 5
Washington University School of Medicine	(1932)	82 5
Creighton University School of Medicine	(1932)	82 5
Eclectic Medical College Ohio	(1933)	82 5
Western Reserve University School of Medicine	(1933)	82 5
Hahnemann Medical College and Hospital of Philadelphia	(1936)	82 5
University of Pittsburgh School of Medicine	(1937)	82 5
Marquette University School of Medicine	(1933)	82 5
University of Wisconsin Medical School	(1933)	82 5
University of Manitoba Faculty of Medicine	(1919)	82 5
University of Edinburgh Faculty of Medicine	(1919)	82 5
Northwestern University Medical School	(1933)	82 5
Johns Hopkins University School of Medicine	(1913)	82 5
Harvard University Medical School	(1933)	82 5
University of Minnesota Medical School	(1932)	82 5
Washington University School of Medicine	(1932)	82 5

Illinois June Examinations

Mr Homer J. Byrd, superintendent of registration Department of Registration and Education, reports the written and practical examination held in Chicago, June 22-26 1937. The examination covered 10 subjects and included 100 questions. An average of 75 per cent was required to pass. Two hundred and eighty-eight candidates were examined, 286 of whom passed and two failed. The following schools were represented:

School	PASSED	Year Grad	Per Cent
College of Medical Evangelists	(1937)	81 1	81 1
George Washington University School of Medicine	(1936)	81 1	81 1
Chicago Medical School	(1937)	81 1	81 1
Loyola University School of Medicine	(1937)	81 1	81 1
Northwestern University Medical School	(1936)	81 1	81 1
Rush Medical College	(1936)	81 1	81 1
School of Medicine of the Division of the Biological Sciences	(1937)	81 1	81 1
University of Illinois College of Medicine	(1935)	81 1	81 1
Harvard University Medical School	(1932)	81 1	81 1
University of Minnesota Medical School	(1937)	81 1	81 1
St. Louis University School of Medicine	(1936)	81 1	81 1
Creighton University School of Medicine	(1936)	81 1	81 1
University of Oregon Medical School	(1934)	81 1	81 1
Woman's Medical College of Pennsylvania	(1936)	81 1	81 1
Marquette University School of Medicine	(1937)	81 1	81 1
University of Wisconsin Medical School	(1937)	81 1	81 1
Friedrich Wilhelms Universität Medizinische Fakultät Berlin	(1931)	81 1	81 1
Ludwig Maximilians Universität Medizinische Fakultät München	(1922)	81 1	81 1
Universität Heidelberg Medizinische Fakultät	(1924)	81 1	81 1
National University of Athens School of Medicine	(1930)	81 1	81 1
Magyar Királyi Pázmány Péter Tudományegyetem Orvosi Fakultás Budapest	(1927)	81 1	81 1
Universität Basel Medizinische Fakultät	(1936)	81 1	81 1
Universität Bern Medizinische Fakultät	(1913)	81 1	81 1

Chicago Medical School
Universitatea din Bucuresti Facultatea de Medicina

Forty-three physicians were successful in the practical examination for reciprocity and endorsement applicants held in Chicago, June 24. The following schools were represented:

School	PASSED	Year Grad	Per Cent
College of Medical Evangelists	(1930)	81 1	81 1
Rush Medical College	(1934)	81 1	81 1
School of Medicine of the Division of the Biological Sciences	(1935)	81 1	81 1
University of Illinois College of Medicine	(1937)	81 1	81 1
State University of Iowa College of Medicine	(1927)	81 1	81 1
University of Kansas School of Medicine	(1930)	81 1	81 1
University of Louisville School of Medicine	(1936)	81 1	81 1
Johns Hopkins University School of Medicine	(1913)	81 1	81 1
Harvard University Medical School	(1933)	81 1	81 1
University of Minnesota Medical School	(1932)	81 1	81 1
St. Louis University School of Medicine	(1933)	81 1	81 1
Washington University School of Medicine	(1932)	81 1	81 1
Creighton University School of Medicine	(1932)	81 1	81 1
Eclectic Medical College Ohio	(1933)	81 1	81 1
Western Reserve University School of Medicine	(1933)	81 1	81 1
Hahnemann Medical College and Hospital of Philadelphia	(1936)	81 1	81 1
University of Pittsburgh School of Medicine	(1937)	81 1	81 1
Marquette University School of Medicine	(1933)	81 1	81 1
University of Wisconsin Medical School	(1933)	81 1	81 1
University of Manitoba Faculty of Medicine	(1919)	81 1	81 1
University of Edinburgh Faculty of Medicine	(1919)	81 1	81 1
Northwestern University Medical School	(1933)	81 1	81 1
Johns Hopkins University School of Medicine	(1913)	81 1	81 1
Harvard University Medical School	(1933)	81 1	81 1
University of Minnesota Medical School	(1932)	81 1	81 1
Washington University School of Medicine	(1932)	81 1	81 1

† License has not been issued
‡ Verification of graduation in process

Book Notices

Cunningham's Text Book of Anatomy Edited by J C Brash M A MD FRCS Professor of Anatomy University of Edinburgh and E B Jamieson MD Lecturer on Anatomy University of Edinburgh Seventh edition Cloth Price \$10 Pp 1 506 with 1 247 illustrations New York & London Oxford University Press 1937

In thirty five years this book has gone into the seventh edition The first three editions, 1902-1909, were prepared under the editorship of D J Cunningham, the next three editions under the editorship of Arthur Robinson, and the present edition under the editorship of Drs J C Brash and E J Jamieson The retirement of the previous editor, Professor Robinson, has entailed a change in certain sections of the book, especially Professor Robinson's own chapters on human embryology and the blood vascular and lymphatic systems, which have been revised by Dr Brash, who has also revised the introduction to the book Thus and the retirement of Prof J T Wilson necessitated two new contributors, Prof R D Lockhart of the University of Birmingham, who took over the chapter on myology, and Prof A B Appleton of the University of London, who takes over the chapter on the ductless glands Since only six years has elapsed since the previous edition was published, substantial changes were necessary in only a few sections The whole book, however, has been revised and where necessary changed to comply with the present views and methods in the teaching of anatomy There are many new illustrations A series of plates has been introduced with photographs of the living body showing the effects of muscles in action, and many roentgenograms illustrating the structure and growth of the skeleton and the position and form of the organs in the body Also the revision of the Basle Nomina Anatomica, which was approved by the Anatomy Society of Great Britain and Ireland in 1933, has been introduced The revision in nomenclature is not a sweeping one, however, and much of the apparent change is only a freer translation of the Basle Nomina Anatomica into English than has been used heretofore A glossary preceding the introduction shows what changes have been made in the nomenclature T Wingate Todd, professor of anatomy at Western Reserve University School of Medicine, Cleveland, again has prepared the chapter on the respiratory system and is the only contributor from the United States The book continues to be well adapted to the needs of both practicing physicians and medical students

Clinical Electrocardiography By Sir Thomas Lewis MD FRSc DSc The Lecturer in Charge of Department of Clinical Research University College Hospital London Sixth edition Cloth Price 8s 6d Pp 128 with 109 illustrations London Shaw & Sons Ltd 1937

The first edition of this popular work—a most welcome pioneer volume it was—appeared in 1913 The present edition shows almost no change from the fifth of seven years ago, there are the same number of pages in this edition as in that of 1930 and in the fourth edition of 1928 One familiar figure, however, on page 6, with the hands and left foot immersed in jars, has been replaced by one showing the more modern and simpler method of attaching the electrodes by means of cuffs The last four pages, on the electrocardiogram in coronary artery thrombosis, have been rewritten, bringing this subject more nearly to date It may be of interest to note that the statement at the foot of page 28 concerning the origin of certain anomalous electrocardiograms remains as it was written seven years ago 'Which of these two types represents the human leuogram and which the dexuogram has developed into a matter of debate I therefore leave the curves unidentified with right or left ventricle, and later in this book treat the forms of extrasystole similarly Actually it is at present a matter of little practical consequence to which ventricle the beats are assigned' Some readers will feel disappointment at the unwillingness of the author to express his opinion on this matter which has been so much discussed as also at his omission of any consideration of leads, e g lead 4, other than the conventional three leads This attitude, however, is in line with the plan of the book, which is to avoid topics that Sir Thomas regards as still unsettled or the subject of controversy In spite of these omissions and of some others that have to

do with the more recent developments in electrocardiography, and in spite of the minimal amount of change from the previous edition, the work still remains one of the best guides for the practitioner who desires help in trying to understand the clinical significance of the electrocardiogram As has been so often remarked, Sir Thomas is a past master in his ability to write clearly and tersely

Cancer and Diet with Facts and Observations on Related Subjects By Frederick J Hoffman LL D The Biochemical Research Foundation of the Franklin Institute Philadelphia Cloth Price \$5 Pp 767 Baltimore Williams & Wilkins Company 1937

This book is divided into five parts, not including a group of appendices The first part deals with the dietary theories of cancer, as the author says, it is a review of the statements of "more or less competent" authors on the question of the possible dietary or nutritional influence in cancer causation treatment and control The second part, which is devoted to the modern diet, deals with the author's hypothesis that essential errors underlie the modern diet of civilized races, depending chiefly on modified foods from international sources" As a result it is felt that "far reaching changes in bodily functioning and metabolism are introduced which, extending over many years, are among the causes or conditions predisposing to the development of malignant new growths" The third part deals with cancer metabolism, the fourth with dietary facts concerning cancer patients The fifth contains a general summary and conclusion Under surgery the index lists only two items, namely, surgical failures and operations ineffective Nothing is said of x-rays in the index or of roentgenology Radioactive substances and radium and acid reaction are listed in the index but only a line or two in the text is devoted to either The whole book, therefore, is devoted to expanding an argument, namely, that diet is principally responsible for cancer The book cannot be recommended either as a dispassionate study of diet and cancer or as in any way a well balanced book on cancer Such volumes do nothing to advance knowledge By their approach to the subject they actually impede progress by creating a certain amount of support for charlatans who have been exploiting ideas of dietary causation of cancer for many years

Common Neuroses of Children and Adults By O Spurgeon English MD Clinical Professor of Psychiatry Temple University Medical School Philadelphia and Gerald H J Pearson B A MD Assistant Professor of Pediatrics Temple University Medical School Philadelphia Cloth Price \$3 50 Pp 320 New York W W Norton & Company Inc 1937

As stated in the authors' preface, "this book is an attempt to bring together under one cover material which is so voluminous and so widely scattered as to be with difficulty accessible to the student and practitioner of medicine" The authors not only accomplish their purpose but do so in a clear, concise and well organized manner The Freudian concepts of the dynamics of personality formation and the development of personality aberrations are presented in simple language The neuroses of children and adults with which the physician most commonly deals are described in a systematic fashion Any practitioner interested in these conditions cannot afford to be ignorant of the psychoanalytic approach to them To date, and probably for a long time to come, nowhere will he find this information as thoroughly and carefully presented as it is in this book It must be clearly understood that all the material is presented according to psychoanalytic theories and principles of psychiatry Any one who is unacquainted with psychoanalytic literature and thought will at first reading find it difficult, if not impossible, to accept much of that which the work includes For example, in the discussion on some of the phobias, a great deal of gravity is attached to many minor manifestations As every one knows, fear is an emotional pattern common to the behavior of all children In most instances the source is not difficult to uncover The unconscious fear of castration may be a source of fear of animals in isolated cases, but it would seem that a previous experience of a nip on the leg by a too aggressively sadistic puppy is a much more frequent and logical cause This is not really a defect of the book but an example of psychoanalytic approach with which the average physician will take issue A criticism that might be offered concerns the dogmatism with which the authors discuss treatments of

the neuroses. According to them, psychoanalysis offers the only solution to most of the problems. Since the book is intended for practitioners and students of medicine, the portions on therapy are rather discouraging. Practitioners of psychoanalysis may find the subject matter somewhat elemental for their purpose, but even they will find much that is of value in the material collected from the recent contributions in the field of child psychiatry. Many orthodox psychiatrists will reject this work because of their refusal to accept psychoanalytic theories, but even the most resistant of these psychiatrists will find in this work much that is new and interesting, if not helpful. The authors have avoided any controversial issues with formal psychiatric techniques, except in the last chapter, entitled "Preparation for Psychiatric Work." Herein are set forth the requirements for certification by the American Board of Psychiatry. Following this the authors point out that the important preparation in psychiatry will come "through a knowledge of human psychology and psychopathology which can be acquired only through a study of one's own emotions and their accompanying ideation and behavior and the emotions and resulting ideation and behavior of others."

The Alimentary Factor in Disease. By MAX H. KUCZYNSKI, MD, D.Sc. Pathologist to the Ministry of Public Health of Peru. Second edition of Studies on Nutrition. Paper. Price 3 guilders. Pp. 130. The Hague. G. Naef. 1937.

This is a curious book and one that is based on a good deal of observation and thinking. The author has worked in many parts of the world on a number of the virus diseases such as encephalitis and yellow fever, also on trypanosomiasis and some of the avitaminoses. Always he has been interested in the fact that the nutrition of an animal and its supply of vitamins influence the type of its reaction to infection. He has found also that the nutrition of an animal can affect its sensibility to roentgen rays. In studying yellow fever he was impressed by the fact that the state of nutrition of the monkeys used as experimental animals had much to do with determining whether or not they survived the infection, and this accounts probably for differences in the mortality rates reported by different investigators. Such differences in nutrition account also for peculiar differences in the reactions of individual animals to inoculation with trypanosomiasis. Kuczynski was interested also in the percentage incidence of gastric ulcers seen in animals given different types of diet and then infected with the virus of encephalitis. In children with poliomyelitis he was impressed with the relation between the amount of physical work done and the incidence of paralysis. The book is hard to review partly because each chapter deals with a different disease and partly because the scores of observations recorded are not always well strung on the thread of the author's thought. The text is at times incomprehensible perhaps partly because of a poor translation but with all this the book is thought producing and every young experimentalist who is starting out to work on animals should look through it and should keep in mind the facts which it brings out.

Une forme cérébrale de la cholestérinose généralisée (type particulier de lipose a cholestérine). Par Ludo van Bogaert, Hans J. Scherer et Emilie Epstein. Paper. Price 45 francs. Pp. 183 with 61 illustrations. Paris. Masson & Cie. 1937.

This is the most recent monograph on cholesterol lipodosis. In the introduction it is stated that Ludwig Pick and Emil Epstein classify the diseases of lipid metabolism into three groups which have as a common character deposits of lipids and fatty substances and which have a special characteristic determined lipid. These are the kerales or cerebroside of Gaucher's disease, the phosphatide of Niemann-Pick's disease and the cholesterol lipodosis characterized by the presence of cholesterol and its esters. This includes Schüller-Christian's disease. The authors also speak of a fourth group including progressive hypodystrophy, adiposogenital dystrophy and hypophysial obesity. The first chapter is a discussion of the actually known lipodosis. The second discusses the clinical facts of this disorder and the importance of the clinical aspect in this entity. The third chapter deals with the anatomical and histopathologic study of the disease. The fourth chapter takes up the biochemical aspects of the fatty deposits and the chemical changes up to a

physiopathologic outline of this disorder. The work is done in a clear and critically analytic. It has a large bibliography. It should be available to all pathologists, neurologists, internists and pediatricians.

Practical Methods in the Diagnosis and Treatment of Venereal Diseases for Medical Practitioners and Students. By David Lees, DSO, MA, DPH. With the following contributors: R. Cranston, Low, MD, FRCP, Consulting Physician for Skin Diseases, Edinburgh Royal Infirmary; William R. Logan, MD, FRCP, DPH, Bacteriologist, Edinburgh Royal Infirmary; and R. C. L. Bachelor, MA, MD, FRCP, Director of Department of Venereal Diseases to Edinburgh Royal Infirmary and Edinburgh Corporation. Third edition edited and revised by F. Lees, MB, FRCP, Assistant Medical Officer for Venereal Diseases to Edinburgh Royal Infirmary and Edinburgh Corporation. Cloth. Price 1. Pp. 608 with 93 illustrations. Baltimore. William Wood & Company. 1937.

This publication is in reality a handbook on the clinical management of the venereal diseases prepared for the general practitioner. The third revision is an improvement on the previous excellent work of the late David Lees. That much of the clinical experience on which the book is based was acquired at the Royal Infirmary in Edinburgh is evidenced by the subchapter on gonococcal diseases of the skin, which includes a concise but vivid description of keratoderma blennorrhagica. The schedule of treatment for early syphilis recommended by the Committee of Experts on Syphilis and Cognate Subjects of the Medical Organization of the League of Nations is the scheme of choice of the authors. In the description of regional syphilitic lesions the inexperienced student may be misled by a description of an interesting but rare patient with chancre of the conjunctiva. It is also to be regretted that additional space was not devoted to a more thorough presentation of flocculation tests in the serologic diagnosis of syphilis. The well known preference of British workers for the complement fixation procedure in the serodiagnosis of syphilis probably explains the latter omission. Like most of our British colleagues, the authors have a relatively high regard for the efficiency of complement fixation tests in the diagnosis of gonorrhea. The standards of cure laid down for gonorrhea are interesting and should be a valuable aid to the clinician.

Obstetric and Gynecologic Nursing. By Frederick H. Falls, M.D., F.A.C.S., Professor of Obstetrics and Gynecology, University of Illinois College of Medicine, and Jane R. McLaughlin, B.A., R.N., Superintendent of the Department of Obstetrics and Gynecology Research and Educational Hospital, University of Illinois College of Medicine. Cloth. Price \$3. Pp. 492 with 83 illustrations by Charlotte S. Holt. St. Louis. C.V. Mosby Company. 1937.

In line with the trend in medical education in this country, the authors have combined the subjects of obstetrics and gynecology in one book. Also in accordance with present custom in the preparation of books for nurses, this book represents the combined effort of a physician and a nurse, both of whom are leaders in their field. The book is well written and its thirty-four chapters contain the essential facts which nurses should know about obstetrics and gynecology. The value of the book is greatly enhanced by the illustrations (one is repeated) which are highly instructive. Even though the book does not contain as much information as some other books on obstetrics for nurses, it will nevertheless admirably serve the purpose for which it was written.

Curioterapia in dermatologia. Parte generale. Principi fondamentali della curioterapia. Le trasformazioni radioattive. Basil biologiche. Azione delle varie irradiazioni sulla pelle (Alfa Beta Gamma). Parte speciale. Technica curioterapica nelle varie dermatosi. Dal Prof. Vincenzo Palumbo, direttore Istituto radioterapico Italiano. Pp. 36 lire. Pp. 87 with 76 illustrations. Belluno. Casa editrice Libreria A. Salvador. 1937.

In this little volume Palumbo discusses the value of radium in the treatment of diseases of the skin. The general part of the book takes up the physical foundations of radium therapy, the radioactive transformations, the biologic basis of radium therapy and the action of alpha beta and gamma radiation on the skin. In the special portion of the book the technical aspects of the radium treatment of various dermatoses are treated. The excellence of the results that may be obtained in correct treatment is shown by many photographs of patients. In no sense can this book be regarded as an exhaustive treatise rather it constitutes a brief setting forth of established facts.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Optometry Practice Acts Federal Court May Not Enjoin Enforcement of Injunction Issued by State Court

—The superior court, Mecklenburg County, N. C., enjoined Benjamin Ritholz and others, doing business as the National Optical Stores Company, from practicing optometry in North Carolina or from furnishing any kind of material or apparatus for ophthalmic use without a written prescription from a person, other than an employee of the defendants, licensed to practice optometry or medicine in North Carolina. Ritholz and the other defendants in the superior court then instituted an action in the federal district court, middle district, North Carolina, against the state board of examiners in optometry, the governor, the attorney general, and the sheriff of Mecklenburg County, to restrain the enforcement against Ritholz and the others of (1) the provisions of the North Carolina optometry act and (2) the terms of the injunction issued by the superior court.

The National Optical Stores Company, according to the court, was engaged in the manufacture of eyeglasses, lenses and frames in the city of Chicago. It possessed no license to practice either optometry or medicine in North Carolina. The superior court found that Benjamin D. Ritholz, Samuel J. Ritholz, Morris I. Ritholz, Fannie Ritholz, Sylvia Ritholz and Sophia Ritholz, trading as the National Optical Stores Company, had offices in Charlotte, N. C., and that they employed in those offices one Dr. L. H. Coffey, at a salary of \$45 a week, that the defendants through their agents, advertised in newspapers and by radio that they would sell complete glasses for \$3.45 and guaranteed satisfaction, that a large number of persons who made affidavits responded to these advertisements by going to the offices of the defendants, but none of them were able to purchase glasses for the sum stated but on the contrary most were required to pay several times that amount; that several of the persons who furnished affidavits found their glasses completely unsatisfactory and in some instances the glasses were, according to the affidavit of a doctor of medicine who specialized in the treatment of the eyes, positively injurious to the eyesight of the persons who had purchased them. The superior court further found that the examination of the eyes of persons who purchased glasses from the defendants was made for the most part by Dr. L. H. Coffey who was licensed to practice medicine in North Carolina but that in some instances he had been assisted in making the examination of eyes by persons licensed neither as optometrists nor as doctors of medicine. No separate charge was made for such examinations, but the glasses were sold for a price which included the examination of the eyes. The examinations were made by Dr. Coffey by the use of a trial frame into which glasses were fitted and no other instrument of any kind was used by Dr. Coffey. When glasses were sold, apparently the prescriptions were sent to the offices in Chicago and the glasses sent from there to the North Carolina office. The superior court also found as a fact that one G. P. Sayers, another employee of the National Optical Stores Company in its North Carolina offices, sold or attempted to sell, furnish, replace or duplicate lenses, frames and mountings, and replaced them by ordering them from the Chicago office without a written prescription from persons authorized under the laws of North Carolina to practice optometry or medicine and that this constituted the practice of optometry by the company.

In this case, said the federal district court, the state court held that the method of doing business which Ritholz and the others pursued in North Carolina constituted a violation of the optometry practice act and enjoined them from continuing to do business in that way. Ritholz and the others now seek the court continued, to protect the method of doing business by enjoining any interference with that business by an enforcement of the optometry practice act. But said the court since no effort was being made to enforce the act against them except through the proceedings in the state court, the present action constituted an attempt to enjoin the enforcement of the decree of the state court. A writ of injunction, however,

cannot be granted by any court of the United States to stay proceedings in any court of a state, except cases in which such injunction may be authorized by any law relating to proceedings in bankruptcy. 28 U. S. C. A., sec. 379. Irrespective of the provision in the judicial code just cited the court said, the present suit must be dismissed as an attempt to review by a bill in equity in a federal court the decision of a state court. The issue involved, both in the case decided by the state court and in the case in the federal court, was the right of Ritholz and the others to do business under the methods they were pursuing. This issue was squarely determined against them in the suit in the state court and an injunction was issued accordingly. The rule is well settled that one court of equity will not enjoin proceedings in another court of coordinate jurisdiction. The remedy of the plaintiffs, the court pointed out, if they are aggrieved by the action of the state court, is to appeal to the state supreme court, the action of which in proper cases may be reviewed by the Supreme Court of the United States by writ of certiorari. After litigating the issue in the state court, however, they cannot remove the case to the federal district court, nor can they obtain a review of an adverse decision by filing a bill in equity in the federal district court.

For the reasons stated, the federal district court dismissed the plaintiffs' bill.—*Ritholz et al. v. North Carolina State Board of Examiners in Optometry et al.*, 18 F. Supp. 409.

Medical Practice Acts Violation of Harrison Narcotic Act Involves Moral Turpitude—The medical practice act of Arizona authorizes the board of medical examiners to revoke the license of a physician who is guilty of unprofessional conduct and defines that term to mean, among other things, the conviction of any offense involving moral turpitude. The board revoked Du Vall's license to practice medicine. The superior court of Maricopa County, in a certiorari proceeding affirmed the order of the board, and Du Vall appealed to the Supreme Court of Arizona.

The extent of the power of the court, said the Supreme Court, to review on certiorari is limited to a determination of the question as to whether the inferior tribunal regularly pursued its authority. If the facts stated in the complaint against Du Vall were sufficient to confer jurisdiction on the board to proceed to a hearing, and if a hearing was had at which he was given an opportunity to present his defense, errors and irregularities in the proceedings and in the board's conclusion may not be reviewed on certiorari. While the complaint should state a statutory ground or grounds as cause for revoking a license, it is not necessary that such ground or grounds be set forth with the preciseness and particularity observed in an indictment or information or in a complaint in a civil action. The proceedings before the board are more or less informal. If the accusation is sufficient to advise the physician of the nature and character of the charges so that he may prepare himself to defend thereon, it is sufficient.

The first count of the complaint charged that Du Vall "dispensed, prescribed by prescription or sold drugs for other than medical purposes to a person who was an habitual user of such drugs without any intent or purpose to cure said habitual user of the use of said drugs" and that such conduct was contrary to the ethics and professional conduct of a physician. Du Vall contended that this count was insufficient both in fact and in law, that the statutory definition of "unprofessional conduct" was exclusive and that what he was charged with doing in the count did not fall within such definition. He contended also that if what was charged in the count be admitted as true, it would not constitute unprofessional or unethical conduct because it was not charged that the drugs dispensed prescribed or sold were of the habit-forming kind, such as morphine or cocaine, or that such drugs were destructive to health or character. With this last contention the court agreed and consequently held that the count should be rejected as not being sufficient either in law or in fact. The court deemed it unnecessary to decide whether the statutory definition of "unprofessional conduct" was or was not exclusive.

The second count in the complaint charged that Du Vall had been convicted under an indictment charging him with violating the Harrison Narcotic Act and that the offense for which he was convicted was one involving moral turpitude. The

question here presented, the court said, is Does the conviction of a regular physician under the Harrison Narcotic Act involve moral turpitude? Just what crimes involve moral turpitude is not always easy to say. Generally speaking, crimes that are *malum in se*, which are wrong in themselves, involve moral turpitude, while those that are *malum prohibitum*, acts that are not wrong in themselves but are crimes because prohibited by law, do not. This distinction is not always true. Assault and battery, for instance, is *malum in se* but rarely involves moral turpitude. One of the great evils of the day, the court pointed out, is the consumption of narcotic drugs. Because so many persons become addicts, most of the states, if not all of them, have enacted laws restricting the right to dispense or prescribe such drugs. While the United States cannot control the use of narcotic drugs, it has under the taxing power made the traffic in them more difficult. If there is any one who is to be pitied, the court said, it is the addict of habit-forming drugs of the narcotic kind. He is usually a hopeless loss to society. He is a real menace. He will do most anything to secure the drug to satisfy his cravings and under its influence commit most desperate crimes. No one knows this better than the members of the medical profession, bound by their honor and the Hippocratic Oath to the highest ideals in their relation to society and especially those seeking their advice and help. When one of these has been convicted of violating the Harrison Narcotic Act, the court said, he is guilty of "an act of baseness contrary to the accepted and customary rule of right and duty between man and man." In the present case, the indictment on which Du Vall was tried charged him with making, on the same day, two separate sales to an addict, one for four grains of morphine and the other for three, not in the course of his professional practice and not in pursuance of a written order. How could it be said, the court questioned, that a physician who would do what is charged here is of good moral character, or that he is not prostituting his high profession for material gain?

After referring to several definitions of the term "moral turpitude," the court said that it seemed reasonable that the Arizona legislature, when it provided that a physician's license should be revoked when he was convicted of a crime involving moral turpitude, must have meant as measured by the standards of policy and morality as found in Arizona laws. At the time Du Vall was charged with having violated the Harrison Narcotic Act, the same act under the Arizona law was a felony, punishable by a fine of not less than fifty nor more than one thousand dollars or by confinement in the penitentiary for not more than five years, or both. So we must say that those things which are discountenanced and regarded as evil and accordingly forbidden by society are immoral and that the doing of them contrary to the sentiment of society thus expressed involves moral turpitude and this regardless of the punishment imposed for their doing. *State v. Malins*, 9 N. D. 501, 230 N. W. 735, 71 A. L. R. 190. The proceeding before the medical board to revoke a license is not criminal, the court said, and does not require that every doubt as in a criminal case be resolved in favor of the innocence of the licensee. A conviction under the Harrison Narcotic Act negatives all presumptions of good faith on the part of the defendant and brands him as a person of bad moral character, unfit to practice medicine.

Du Vall finally contended that the order revoking his license was void because it failed to "show the facts essential to the jurisdiction of the board making it." The order of the board omitting formal parts provided

The said Board having fully considered the evidence here to for [sic] submitted and being fully advised in the premises [sic] find [sic] as follows:

That the said respondent Dr. Claude Emerson Du Vall [sic] has been found guilty of unprofessional conduct therefore the Board by unanimous [sic] vote here by [sic] revokes the license of the said respondent Dr. Claude Emerson Du Vall [sic].

In support of his contention Du Vall cited *Blunt v. Shepardson*, 286 Ill. 84, 121 N. E. 263 in which case the entire proceeding was in parol and the order of revocation gave no reason for the revocation. The court very properly held the proceeding void. What was done in that case, however, was very different from the situation here the court said. Du Vall was formally charged with unprofessional conduct of the

charges was incontrovertibly proved. He was given a formal hearing and found guilty of unprofessional conduct. While the order does not state the particular cause for the revocation of his license, reference to the record makes it very clear that it was based on his conviction of a crime involving moral turpitude.

The Supreme Court, therefore, affirmed the judgment of the superior court upholding the revocation of Du Vall's license. *Du Vall v. Board of Medical Examiners of Arizona* (31 Ariz. 66 P. (2d) 1026.

Pharmacists Liability for Mistake in Filling a Prescription—A physician, called to treat the plaintiff for a minor ailment, gave him a written prescription which read: Tablets, hydrargyri chloridi misis comp., Two at bed time as directed," and orally directed that the medicine be taken internally. The prescription was sent to a pharmacy owned by the defendants. The pharmacist, one of the defendants in filling the prescription, dispensed bichloride of mercury tablets in 7½ grains each instead of the compound cathartic tablets called for by the prescription. On each of the tablets dispensed appeared the word "poison" and a skull and cross bone. Attached to the container was the regular label of the pharmacy on which appeared the printed words "for external use only" and the typewritten instructions "two at bed time as directed." The word "poison" in large heavy lettering and a skull and cross-bones were not printed on the label, as was required by law, to designate the poisonous character of the contents of the container. The plaintiff became violently ill after taking two of the tablets. His illness, however, did not prove fatal. He later sued the defendants to recover damages for the suffering and disability which he claimed was the result of their error. From a judgment in favor of the plaintiff for \$350, both parties appealed to the court of appeal of Louisiana, Orleans.

The defendants contended that inasmuch as customarily bichloride of mercury is compounded in tablets and compound cathartic in pills, the pharmacist was justified in filling the prescription as she did because the use of the word "tablet" in the written prescription indicated that the physician intended to prescribe bichloride of mercury. This contention, however, did not meet with the court's approval because, the court said, the words used in the prescription clearly meant compound cathartic and not bichloride of mercury. Even if there was justification for the error, there was extreme negligence in delivering this deadly poison in a container which did not on its face show the dangerous character of the contents as was required by law. The plaintiff was not negligent, as the defendants contended, in failing to notice the small and insignificant warnings on the tablets, consisting of the word "poison" and a skull and cross-bones. Neither was he negligent in failing to notice that the container bore the printed prescription "for external use only," or if he did notice it, in assuming the oral and typewritten instructions of the physician should be followed instead of the printed directions on the container. The typewritten inscription "two at bed time, as directed," said the court, would ordinarily be taken to mean that the medicine should be taken internally.

Although the court was of the opinion that the plaintiff was entitled to a judgment it could not agree with the plaintiff's contention that the judgment was insufficient. The evidence showed that the plaintiff had been suffering with other illness and that much of his disability and pain resulted from them and not from the pharmacist's mistake. The court concluded, therefore, that the judgment for \$350 amply compensated the plaintiff for his sufferings which had resulted from the pharmacist's error.

Accordingly, the court of appeal affirmed the judgment in favor of the plaintiff—*Martinez v. Dejeu et al* (14 La. 2d) 503 So 808.

Society Proceedings

COMING MEETINGS

American Academy of Orthopedic Surgeons, Los Angeles, 5-7
Dr. Carl E. Badgley, 1313 East Ann St. Ann Arbor, Mich.
Society of American Bacteriologists, Washington, D. C., Dec.
Dr. I. I. Baldwin, College of Agriculture, University of Wisconsin, Madison, Wis., Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers in continental United States and Canada for a period of three days. Periodicals are available from 1927 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them. Titles marked with an asterisk (*) are abstracted below.

American J. Digest. Dis. & Nutrition, Fort Wayne

4 487 544 (Oct.) 1937

- *Artificial Fever in Treatment of Ulcerative Colitis. Preliminary Report. L. K. Ferguson, F. Fetter and T. G. Schnabel. Philadelphia—p. 487.
- Studies in Intermittent Heat Sweats. Chlorides and Acid Base Balance. L. L. Hardt and Alice Palmer. Chicago—p. 489.
- Food Habits of the Patient with Peptic Ulcer. Margaret Elder and E. S. Emery Jr. Boston—p. 493.
- Treatment of Peptic Ulcer by Diet of Goldberger and Wheeler. H. A. Warren, D. G. Friend and E. S. Emery Jr. Boston—p. 495.
- Dental Caries and Parodontal Disturbances. III. Dietary History and Its Value in Dental and Medical Practice. Nina Summonds. San Francisco—p. 497.
- Syphilis of the Stomach. H. J. Mayer. Los Angeles—p. 503.
- Carcinoma of the Small Intestine as a Hidden Cause of Anemia. A. R. Hatcher and K. E. Voldeng. Wellington, Kan.—p. 507.
- Errors in Gastro-Enterologic Diagnosis. M. Golob. New York—p. 512.
- Tumors of Small Intestine. Review of Literature and Report of Eight Additional Cases. J. J. Stein. Hines Ill.—p. 517.
- The Mechanism of Milk Clotting. II. Role of Hydrogen Ion Concentration. I. N. Kugelmass. New York—p. 523.

Artificial Fever in Treatment of Ulcerative Colitis—Ferguson and his associates treated five cases of ulcerative colitis by artificial fever, for the production of which they used the Kettering hypertherm. Their method of treatment consisted of two and one-half to three hours of fever between 104 and 105 F (rectal) three times a week. The number of treatments varied between seven and seventeen, the average being twelve per patient. Each patient responded favorably to fever therapy, the clinical improvement preceded the improvement in the proctoscopic appearance. In most cases, after three or four treatments the number of stools was markedly reduced and bleeding and tenesmus were less. The patients' appetites improved and their weights began to increase. In spite of the clinical improvement, fever treatments were continued until the proctoscopic appearance also had improved, except in one patient, who refused to have more than seven fever treatments. In this patient the appearance of the intestine on proctoscopic examination continued to improve, in spite of the fact that fever treatments were not continued. The use of artificial fever in the treatment of ulcerative colitis is not regarded as a treatment that will produce a permanent cure.

American Journal of Tropical Medicine, Baltimore

17 639 772 (Sept.) 1937

- Spotted Fever in Tobia, Colombia. Preliminary Report. L. Patino A. Afanador and J. H. Paul. Bogota, Colombia—p. 639.
- Present Day Methods for Study and Control of Yellow Fever. F. L. Soper. Rio de Janeiro, Brazil—p. 655.
- *Epidemic of Urban Yellow Fever Which Originated from a Case Contracted in the Jungle. A. M. Walcott, Rio de Janeiro, Brazil. E. Cruz, A. Paoliello and J. Serafini Jr.—p. 677.
- Variations in Cametocyte Production in Avian Malaria. Winton Eliza Beth Gambrell. Chicago—p. 689.
- Comparative Effects of Blood of Different Species of Vertebrates on Egg Production of *Aedes Aegypti* Linnaeus. P. A. Woke. Baltimore—p. 729.
- Granuloma Inguinale. R. D. Aunoy and E. von Haam. New Orleans—p. 747.
- The Sting of an Ant. N. A. Weber. Grand Forks, N. D.—p. 765.

Epidemic of Urban Yellow Fever—Walcott and his colleagues present data from which it seems probable that a small epidemic of yellow fever originated through a person who became infected in the jungle but later remained during almost the entire period of his attack in the town of Cambara, where he infected the *Aedes aegypti* mosquitoes, which in turn caused the outbreak of the urban yellow fever. It is not possible to deny absolutely that the epidemic may have been initiated by some unrecognized case of urban yellow fever in

a person arriving from another city or town, but persistent inquiries failed to disclose acceptable evidence for such a conclusion. The first three cases occurred in close neighbors on the same small premises, and the epidemic developed among persons living in nearby houses who had not been absent from Cambara for three weeks previously. The outbreak subsided promptly following the introduction of adequate measures for the prevention of the propagation of *Aedes aegypti* mosquitoes.

Annals of Surgery, Philadelphia

106 801 960 (Nov.) 1937

- Early and Remote Effects of Total and Partial Paravertebral Sympathectomy on Blood Pressure. Experimental Study. K. S. Grimson, H. Wilson and D. B. Phemister. Chicago—p. 801.
- Studies on Etiology of Renal Hypertension. A. Blalock and S. E. Levy, Nashville, Tenn.—p. 826.
- Production of Hypertension by Constricting the Artery of Single Transplanted Kidney. Experimental Investigation. F. Glenn, C. G. Child and G. J. Heuer. New York—p. 848.
- Epinephrine Hypertension. Effect of Continuous Intravenous Injection of Epinephrine on Blood Pressure. Experimental Investigation. J. Van Prohasky, H. P. Harms and L. R. Dragstedt. Chicago—p. 857.
- *Postoperative Thrombosis and Embolism. F. W. Bancroft, Margaret Stanley Brown and E. Chaffarg. New York—p. 868.
- Treatment of Embolism of Greater Arteries. C. C. Lund. Boston—p. 880.
- *Studies in Etiology of Acute Appendicitis. Significance of Structure and Function of Vermiform Appendix in Genesis of Appendicitis. Preliminary Report. O. H. Wangenstein, R. E. Burge, C. Dennis and W. P. Ritchie. Minneapolis—p. 910.
- Repair of Peripheral Nerve Injuries. M. B. Tinker and M. B. Tinker Jr. Ithaca, N. Y.—p. 943.

Postoperative Thrombosis and Embolism—Bancroft and his co-workers are confident that the physical factors accepted by most authors (dehydration, stasis, infection and trauma) are the main causes of postoperative thrombosis, thrombophlebitis and embolism. In addition to these factors, it is felt that there must be a biochemical change in the blood which precedes and accompanies thrombophlebitis and embolism, because all the physical factors may be present in certain patients and no accident may occur, while in other patients the minimal number of the physical factors may be present and an accident may result. It is recognized that there are definite bleeding diatheses. If, therefore, it is true that there are potential bleeders, one can readily assume that there are potential clotters. If this theory is true, the authors believed that a careful analysis of the blood factors involved in clotting would reveal a significant change before a thrombus occurs. They describe the tests for blood clotting factors, give the result of their prophylactic therapeutic program and discuss the factors entering into blood clotting, viz., fibrinogen, calcium, prothrombin and thromboplastin. The blood of 920 persons was examined. Of these, 111, or 12 per cent, showed high clotting indexes. Only 46 per cent of the patients having high indexes received prophylactic treatment. No accident occurred in the treated cases. In the untreated group nine accidents occurred. Two of these were unrecognized, as the fibrinogen was the only high factor. Newer preparations of heparin for prophylaxis are much more stable than those previously presented by manufacturing chemists. In the authors' early studies they found that heparin injected intravenously lowered the clotting factors in the blood for only an hour or two and then the blood regained its normal tendency. In the present method of injecting into the muscles about the operative site, the heparin is absorbed much more slowly and therefore must have a longer period of potency. Epinephrine should be added to the mixture so that the possibility of hemorrhage is obviated. In only 1 or 2 per cent of all postoperative cases does thrombosis and embolism develop. The clotting factors are a fairly accurate index of a patient's clotting tendencies and if these patients are observed early and placed on a bleeding diet and given sodium thiosulfate, the morbidity may be definitely reduced.

Etiology of Acute Appendicitis—In the light of the knowledge that the vermiform appendix of man secretes fluid, Wangenstein and his colleagues state that its behavior under conditions of obstruction becomes understandable. Whereas it may have been more readily believed that this segment of the intestinal canal, so intimately related to the colon, should be identified with absorption, the demonstration of its secretory function even though it is slight, lends trustworthy credibility to an obstructive origin of appendicitis. That the vermiform

appendix of man may become easily obstructed is obvious. How this obstruction may come about is not so readily discernible. How the appendix may become totally obstructed in other manners than by foreign bodies and appendicoliths demands explanation. That swelling of the mucous and submucous lymphoid tissue may bring about obstruction of the lumen appears reasonable, that augmentation of the normal physiologic obstruction to emptying by reflex nervous causes may initiate circulatory damage to the appendical mucosa and set in motion the effects of continued luminal obstruction would seem to be not unlikely. Observations suggest that the mechanism for production of fluid by the appendix becomes less efficient with increase in age, when appendicitis is also less commonly observed. A closed loop in which secretion occurs would appear to be particularly hazardous when the luminal capacity is small, as it is in the vermiform appendix. Burget and Dragstedt and their associates have indicated how temporary aspiration of a closed loop, or preliminary washing of it, may permit of its being tolerated with the avoidance of rupture. Undoubtedly the same holds true of the vermiform appendix. With gradual development of obstruction or obliteration, undoubtedly complete luminal obstruction may be withstood without rupture.

Archives of Dermatology and Syphilology, Chicago

36 937 1128 (Nov.) 1937

- Cutaneous Tuberculosis in the Negro. A Clinical Entity. Report of Two Cases (One Associated with Syphilis). D. Bloom and H. V. Mendelsohn. New York—p. 937.
- Lesions of Skin and Subcutaneous Tissue in Diseases of Peripheral Circulation. E. D. Telford. Flintshire, England—p. 952.
- Sensitivity to Both Trivalent and Pentavalent Arsenicals. E. Epstein. Oakland, Calif.—p. 964.
- Experimental Arspenamine Dermatitis. Observations on Its Allergic Nature with Special Attention to Schultz-Dale Phenomenon. F. E. Cormia, Montreal—p. 970.
- *Pyogenic Relapse and Sensitiveness to Light in Certain Dermatoses. Influence of Factor of Intercurrent Infection. J. H. Stokes. Philadelphia and J. L. Callaway. Durham, N. C.—p. 976.
- Ringworm Fungus Growing as a Saprophyte Under Natural Conditions. I. Muende and P. Webb. London, England—p. 987.
- Pityriasis Varioliformis Acuta. Report of Case of Extensive Involvement Associated with Bullae. S. S. Robinson. Los Angeles—p. 991.
- Dermal Reticulosis of Obscure Nature. Report of Case. A. N. Goyle. A. Vasudevan and K. G. Krishnaswamy. Madras, India—p. 998.
- Oligosepsis. L. I. Hallay. Middlesboro, Ky.—p. 1008.
- Penosclerotal Elephantiasis of Lymphogranulomatous Origin. Description of Case with Psoriasisform Cutaneous Lesions and Others Resembling an Ecthymatous Pyoderma. W. E. Coutts and H. Abumada. Santiago, Chile—p. 1014.
- Rhinoscleroma. Report of Case. H. E. Alderson. San Francisco—p. 1018.
- Demonstration of Pemphigus Toxin in Fresh and in Dry Blood. D. I. Macht. Baltimore—p. 1022.
- *Effect of Oils Containing Unsaturated Fatty Acids on Patients with Dermatitis. Brief Report of an Experimental Study in Guinea Pigs. J. E. Ginsberg and C. Bernstein, Jr. with technical assistance of L. Vivian. Ioh, Chicago—p. 1031.
- Kline Exclusion Test in Prevention of Transmission of Syphilis. R. Straus. Cleveland—p. 1039.
- Keratosis Blennorrhagica with Corneal Involvement. Further Observations on Therapeutic Effect of Hyperpyrexia. E. Epstein. Oakland, Calif. and S. O. Chambers. Los Angeles—p. 1044.
- Scleredema Adulorum (Buschke). Report of Case Involving the Tongue. L. J. Frank. Sioux City, Iowa—p. 1052.
- Scleroderma and Sclerodactylia Associated with Intermittent Claudication. S. S. Robinson. Los Angeles—p. 1054.
- Ainhum. Report of Six Cases in New York. M. T. Horwitz. Philadelphia and I. Tunick. New York—p. 1058.
- Boric Acid Starch Poultice. D. W. Montgomery. San Francisco—p. 1064.
- Ectodermosis Erosiva Pluriorificialis. Its Resemblance to Human Form of Foot and Mouth Disease and Its Relation to Erythema Exsudativum Multiforme. J. V. Klauder. Philadelphia—p. 1067.
- Effect of Inflammation of Skin on Urinary Excretion of Ketones. T. Cornbleet and R. I. Klein. Chicago—p. 1078.
- Dermatitis Due to Japanese Lacquer. Report of Case of Involvement of Fifteen Years Duration. L. Hollander and J. M. Shelton. Pittsburgh—p. 1081.

Sensitiveness to Light in Certain Dermatoses.—For some time Stokes and Callaway have suspected that intercurrent infections, especially in epidemic waves exercise a sensitizing influence in dermatoses with an underlying allergic or infectious-allergic complex. In the past year in their practice this role has been assumed apparently by an influenzal type of nasorespiratory gastro-intestinal and general infection in the epidemic character of which it is well known that the epidemic prevalence approaches that of the epidemic character of one of eleven outbreaks. It is in the incidence of

dence of pustular relapses and pyogenic dermatoses in the typical dermatologic practice in comparison with that of recurrently epidemic infections of the respiratory and gastro-intestinal tracts that intercurrent infections, in part at least presumably of the virus type, predispose definitely to relapse and presumably to clinically pyogenic and partly pyogenic (acneiform) eruptions. Such relapses show a tendency to occur in persons with familial or hereditary predisposition to pyogenic attacks, occur as mild as well as severe attacks of the intercurrent infection and may even be suspected of occurring in comparatively asymptomatic carriers, surrounded by patients with symptomatically active disease. Their onset tends to follow a period of incubation from seven to eleven days, suggesting the development of an allergic or hypersensitive state, the development of such a state as part of an infectious-allergic complex is still further suggested in certain cases of relapse of primary pyogenic infection by the appearance of sensitiveness to light and apparently also of sensitiveness to both light and drugs.

Fatty Acids and Dermatitis.—Ginsberg and Bernstein made repeated studies of the blood lipids on fifty-six subjects with chronic dermatitis to determine the effect of ingestion of oils (linseed, corn or cod liver) containing unsaturated fatty acids. Their observations give them no reason to believe that there was any characteristic abnormality of the blood lipids in the patients whom they treated or that any specific benefit arises from feeding such patients oils containing highly unsaturated fatty acids. Prolonged administration of unsaturated oils to guinea pigs which had been sensitized to horse serum did not prevent anaphylaxis following injection of horse serum.

Archives of Otolaryngology, Chicago

26 387 508 (Oct.) 1937

- Hearing Before and After Radical Mastoidectomy. Plea for Avoidance of This Operation by Early Adequate Drainage. Summary of Fifty Four Cases with Audiograms and Clinical and Roentgen Findings. E. P. Fowler. New York—p. 387.
- Solitary Xanthoma of External Auditory Canal. H. C. Rosenberger. Cleveland—p. 395.
- Characteristics of Modern Electrically Operated Audiometers. Qualitative and Quantitative Analysis. M. S. Ernsner, L. Podolsky and D. Myers. Philadelphia—p. 400.
- Pneumothorax Complicating Tracheotomy in Fulminating Laryngotracheobronchitis. Report of Case. W. L. Simpson. Memphis, Tenn.—p. 411.
- Vegetable Foreign Body Encapsulated in a Vocal Cord. Report of a Unusual Case. R. S. Rosedale and H. E. Bozer. Buffalo—p. 415.
- *Role of Helium in Cases of Obstructive Lesions in Trachea and Larynx. J. D. Kernan and A. L. Barach. New York—p. 419.
- Cricectomy. Permanent Window in Antrum for Chronic Maxillary Sinusitis. J. H. Childrey. San Francisco—p. 448.
- Myxoma of Palate and Pharynx. Report of Case. J. A. Babbit and D. B. Pfeiffer. Philadelphia—p. 453.
- Acute and Chronic Purulent Otitis Media. Sinus Thrombosis and Empyema of Petrous Pyramid. S. J. Kopetzky. New York—p. 460.
- Helium in Obstructive Lesions in Trachea.**—In the treatment of twenty-one patients with obstruction in some part of the pulmonary airway, Kernan and Barach employed the inhalation of a mixture of helium and oxygen. Of these patients, eleven received marked relief from the signs of obstructed dyspnea. In seven of these there was need for tracheotomy, although one of them had tracheotomy as a precautionary measure two days later. All of them recovered. Although the remaining four patients experienced marked relief as a result of the helium and oxygen therapy there was ultimately a fatal outcome, as a result of tumor in two, of a thyroid crisis in one and of bronchopneumonia following recovery and subsequent tracheotomy in one. In three cases little or no relief was evident and in the remaining seven cases partial or temporary relief was obtained, in three cases in which tracheotomy was ultimately performed recovery took place and the other four patients were fatally ill, one with compression due to a mediastinal tumor, one with compression due to aneurysm and two with bronchopneumonia. Observation of the patients who received positive relief in addition to helium and oxygen therapy led to the belief that pressure would have been an additional help in many of the other cases. In some instances helium and oxygen therapy is entirely palliative. When the obstruction is due to pressure of a neoplasm below the site for tracheotomy, the latter is an alternative to treatment with a mixture of helium and oxygen. In one instance the treatment was continued until roentgen therapy accomplished removal of the

constricting force. If prolongation of life is itself justifiable through the use of roentgen therapy, helium and oxygen therapy, in order to sustain life until an attempt may be made to reduce a tumor by x-rays, is indicated. When the pressure is due to an advancing aneurysm, for which there is no medical therapy, it seems pointless to use helium and oxygen therapy and precipitate a situation which would necessitate indefinite treatment. The most favorable field for this treatment appears to be the inflammatory swellings in the air passages that are due to infection or to mechanical irritation. If the patient can be tided over a certain period without suffocation by inhaling helium and oxygen under a slight pressure, the subsidence of the infection or the traumatic inflammation makes complete recovery possible. The authors' intention is not to minimize the importance of tracheotomy but to emphasize that the ability to dispense with tracheotomy by employing helium and oxygen therapy makes less likely the complications following tracheotomy, such as descending infection and bronchopneumonia. In other cases, those in which tracheotomy is indicated, a period of relative relief by the inhalation of helium and oxygen makes the operation less dangerous.

California and Western Medicine, San Francisco

47 217 288 (Oct.) 1937

- Anesthetic Gas Mixtures Their Explosion Hazards C G Toland and W P Kroger Los Angeles—p 223
Pituitary Dwarfs Their Growth and Treatment Observations on Twelve Cases for Periods of One to Eight Years Leona M Bayer and H Gray San Francisco—p 228
Intrapartum and Postpartum Hemorrhage C A DePuy Oakland—p 233
Simple Eye Tests in a Pediatrician's Office Their Value Helen M Johnson and W P Lucas San Francisco—p 236
Maternal and Child Welfare Its Progress Under the Social Security Act Relation of the Act to Obstetrics in California L G McNeile Los Angeles—p 240
Branchiogenic Cysts E Larson Los Angeles—p 244

Colorado Medicine, Denver

34 697 768 (Oct.) 1937

- The Health Officer's New Problem Child R R Spencer Washington D C—p 716
Recent Advances in Radiation Therapy P R Weeks Denver—p 722
Care of the Ear in Acute Otitis Media F L Beck Cheyenne Wyo—p 734

Iowa State Medical Society Journal, Des Moines

27 511 560 (Oct.) 1937

- Medical Economics C G Heyd New York—p 511
Surgical and Hormone Treatment of Undescended Testicle J W Duncan Omaha—p 514
Advantages of Biomicroscopy in Certain Cases of Beginning Ocular Pathology W H Maloy Shenandoah—p 517
Advantages and Disadvantages of Some New Procedures in Cataract Surgery E P Welsh Clinton—p 520
Osteogenic Sarcoma J T Hanna Burlington—p 524
Vincent's Infection in Children R Stahr Fort Dodge—p 529
A Discussion of Obesity M C Wheelock Mount Pleasant—p 530

Journal of Immunology, Baltimore

33 251 336 (Oct.) 1937

- Further Experiments on Inactivation of Herpes Virus by Vitamin C (l Ascorbic Acid) Margaret Holden and Eleanor Molloy New York—p 251
Passive Anaphylactic Sensitivity to Pneumococcal Capsular Polysaccharides K Goodner and F L Horsfall Jr New York—p 259
Serologic Specificity in Pyridine Derivatives K Landsteiner and N W Pirie New York—p 265
Antilymphocytic Serum W B Chew and J S Lawrence Rochester N Y—p 271
Type Specific Antipneumococcus Rabbit Serum for Therapeutic Purposes Production Processing and Standardization K Goodner F L Horsfall Jr. and R J Dubos New York—p 279
Inhibition of Complementary Activity by Anticoagulants A Wadsworth, F Maltner and Elizabeth Maltner Albany N Y—p 297
Heterogeneous Hemagglutinins in Man Following Therapeutic Injections of Immune Serums Produced in Rabbits F Schiff New York—p 305
Flocculation of Alcoholic Red Cell Extracts by Different Types of Human Heterogeneous Hemagglutinins F Schiff New York—p 315
Antitoxic Response to Diphtheric Antigens in Children D T Fraser and K C Halpern Toronto—p 323

Antitoxic Response to Diphtheric Antigens in Children
—Fraser and Halpern give the results of approximately 600 titrations of serums from 244 children, given three injections of "unmodified" diphtheric toxoid, by showing the percentage distribution of children, by antitoxin levels at certain intervals of

time after the last injection. The antitoxin levels three months after three injections of the unmodified toxoid compare favorably with the levels of antitoxin in a group of "naturally" immune persons. These results were obtained during a time when the incidence of diphtheria infection was low, as evidenced by the morbidity rates, by carrier studies and by the fact that, among the serums serially titrated, in only five instances was there an indication of a rise in antitoxin level due to secondary stimulus.

Journal of Pharmacology & Exper Therap, Baltimore

61 107 204 (Oct.) 1937

- Toxicity and Anesthetic Potency of Some Alkoxo Benzoates and Related Compounds A R McIntyre and R T Sievers Omaha—p 107
Effect of Staphylococcus Aureus Exotoxin on Rabbit Heart J H Dingle H E Hoff L H Nahum and B W Carey Jr, Boston—p 121
Inhibition of Human Gastric Hypermotility by Atropine or Novatropine J P Quigley Cleveland—p 130
Hydrolysis of Salts of Barbituric Acids as Related to Rate of Onset of Anesthesia M T Bush Nashville Tenn—p 134
Tetra Alkylbarbituric Acids M T Bush and T C Butler Nashville, Tenn—p 139
Pharmacology of Deuterium Oxide II Evidence from Fish Melanophores for Sympathomimetic Action H G Barbour and S B Bogdanovitch New Haven Conn—p 148
*Further Study of Barbiturate Picrotoxin Antagonism J C Krantz Jr C J Carr and Frances F Beck Baltimore—p 153
Studies of Cyclopropane III Relation of Electrocardiographic Changes to Arterial Concentrations of Oxygen Carbon Dioxide and Cyclopropane in Dogs Anesthetized with Cyclopropane B H Robbins and J H Baxter Jr Nashville, Tenn—p 162
Relative Hypnotic Effects of Some Ureas of Varied Types A M Hjort E J deBeer J S Buck, W S Ide and D W Fassett, Tuckaboe N Y—p 175
Anesthesia with Cyclopropane Derivatives V E Henderson and S T MacDonald Toronto—p 182
*Renal Excretion of Sulfanilamide E K Marshall Jr K Emerson Jr and W C Cutting Baltimore—p 191
*Distribution of Sulfanilamide in Organism E K Marshall Jr K Emerson Jr and W C Cutting Baltimore—p 196

Barbiturate-Picrotoxin Antagonism—As the work of no previous investigators included a study of oxygen consumption during the period of barbiturate-picrotoxin antagonism, Krantz and his associates studied this phase of the antidotal action. 1 In the white rat picrotoxin significantly antagonizes the depression of oxygen consumption produced by pentobarbital sodium. 2 The increased oxygen consumption produced by epinephrine in normal and in rats depressed with pentobarbital sodium is not effective in antidoting the depressed respiration produced by pentobarbital sodium. Therefore, the antidotal action of picrotoxin against the barbiturates is not primarily an acceleration of oxygen consumption. 3 On the whole rat's brain or on the medullary-pons portion of the rabbit's brain in vitro, picrotoxin fails to combat the depressed potential oxygen uptake, as measured by the rapidity of decolorizing methylene blue solutions. Apparently the antidotal action of picrotoxin is not associated with an increased uptake of oxygen of cerebral tissue in general or cerebral tissue rich in vital centers. 4 Picrotoxin does not apparently stimulate the respiration through the carotid sinus reflex by shifting the acid-base equilibrium of the blood, as the increased respiration occurs without altering significantly the pH of the blood. Therefore the antidotal action of picrotoxin in barbiturate poisoning is attributable mainly to its convulsive action, referred to by Koppanyi and his associates as an "awakening effect."

Renal Excretion of Sulfanilamide—Marshall and his colleagues endeavored to determine the mode of sulfanilamide excretion by the kidney. They studied (1) the clearance of the substance in relation to that of creatinine clearance which presumably measures glomerular filtration, (2) the relation of the plasma concentration of the substance to its clearance and (3) the influence of the rate of the flow of urine on its clearance. In the dog, the sulfanilamide clearance is from 20 to 30 per cent of the simultaneously determined creatinine clearance. If the creatinine clearance is accepted as a measure of the rate of glomerular filtration, from 70 to 80 per cent of the filtered sulfanilamide is reabsorbed in the passage of the glomerular filtrate along the tubule. The sulfanilamide clearance is independent of the plasma concentration of sulfanilamide and is apparently increased by increasing the rate of the flow of urine. Sulfanilamide appears to resemble urea in its excretion in the dog but to be reabsorbed to a greater extent by the tubule. In a few determinations on man, the average sulfanilamide clear-

ance was 22.5 cc per minute. If one considers that the inulin clearance in man averages about 125 cc per minute, it is clear that in man as well as in the dog a large percentage of the filtered sulfanilamide is reabsorbed by the tubule.

Distribution of Sulfanilamide in Organism—Marshall and his co-workers studied the sulfanilamide content of various tissues and fluids of the body, and the relation of the blood concentration to the total sulfanilamide content of the body. Their results indicate that sulfanilamide is almost equally distributed in the tissues of the organism (with exception of bone and fat) and is probably present in equal concentration in all parts of the body if concentrations are expressed per unit of water.

Medical Annals of District of Columbia, Washington 6 285 304 (Oct.) 1937

- Diagnostic Value of Blood Phosphatase Determination J H Roe, Washington—p 285
Artificial Fever Therapy of Gonorrheal Arthritis H B Gwynn Washington—p 288
Neurodermatoses F J Eichenlaub, Washington—p 293
Endometriosis Report of Two Cases J K Cromer Washington—p 295
*Asthma Following Prolonged Exposure to Sulfur Dioxide Report of Case H F Dowling Washington—p 299

Asthma Following Exposure to Sulfur Dioxide—The inhalation of sulfur dioxide has two possible implications: the immediate toxic effect and the delayed or chronic effect. Since the gas changes into sulfurous acid on contact with water, it is quite irritating to the respiratory passages, its acrid fumes inciting the coughing which is so familiar to those who have performed blood nonprotein nitrogen tests. Inhalation of concentrations of 0.001 per cent by volume causes extreme discomfort, while 0.1 per cent causes death by paralysis of the respiratory center. Refrigerator repairmen are continually exposed to the inhalation of sulfur dioxide throughout each working day. In the case cited by Dowling there were several indications of the allergic state: (1) the history of asthma in his mother, (2) the occurrence of asthma in the patient as a child, (3) the high percentage of eosinophils in the blood and sputum and (4) improvement occurring at the same time as hyposensitization. The patient had an allergic constitution with no clinical symptoms for the previous seventeen years, and inhalation of sulfur dioxide (during his first few days as a refrigerator repairman) acted as an irritant to the respiratory mucosa, permitting the dust allergen to excite asthma as a symptom complex. The pathologic state of the bronchial mucous membrane in asthma offered a favorable medium for the growth of bacteria and this together with the continued irritating effect of the sulfur dioxide in lowering the resistance of the bronchial tissues accounted for the development of the asthmatic bronchitis.

Military Surgeon, Washington, D C

81 21400 (N) 1

- Death from Cancer Accelerated Metastatic Heart Report of Case J R Darnall—p 1
Gumma of the Muscle H B Cupp—p 3
Identification Through Dental Records E F Ryan—p 35
Malaria at France Field in 1936 H E Schneider—p 340
Postarsenical Hemorrhagic Encephalitis Report of Case A H Hansen—p 344
Mental Hygiene M I Bloomfield—p 348
Human Convalescent Serum in Treatment of Scarlet Fever J C Fox and D Fisher—p 356
Active Immunization Against Tetanus in Warfare F H Van Wagoner—p 365
Role of Preventive Medicine in Control of Cholera B C T Fenton—p 369

Minnesota Medicine, St Paul

20 691 754 (Nov.) 1937

- Use of Sulfanilamide and Prontosil Solution A E Brown E G Bannick and H C Haben Rochester—p 691
Tumors of the Jejunum J A Johnson Minneapolis—p 697
Significance of Glomerular Nephritis in Childhood Jessie M Bierman Helena Mont—p 703
Back Injuries as an Industrial Disability J R Ruth Duluth—p 706
The Adequate and Inadequate Treatment of Injuries to the Head W M Craig Rochester—p 711
Fracture Dislocation of the Hip J L Hester—p 717
Hand and Wrist Injuries of the Industrial Worker W A J Minneapolis—p 721

New England Journal of Medicine, Boston

217 643 686 (Oct 21) 1937

- *Indications for Use of Ammonium Mandelate in Pyuria in Children W E Wheeler Boston—p 643
Surgical Significance of Melena in Childhood W E Ladd Boston—p 649
Detection and Measurement of Electrical Concomitant of Human Oxytation by Use of Vacuum Tube Potentiometer J R. J. Reel—p 654
Progress in Surgery of Autonomic Nervous System J C W. Boston—p 660
Injection Site Arm Clamp for Self Administration of Insulin D L Davidson, Providence R I—p 669

Use of Ammonium Mandelate in Pyuria—During the last eighteen months, Wheeler has used mandelic acid salts in the treatment of fifty-one patients with acute, chronic or recurrent infection of the urinary tract. Thirty-nine of the patients are free from their urinary infection at present. Infections that are resistant to the action of mandelic acid are fortunately not often encountered in children. If the function of the kidney is good, however, and if there are no severe anomalies, an intensive trial on mandelate therapy may be justified, for some of these infections do clear up under such circumstances. The result of long-standing chronic pyelonephritis in some children if not successfully treated, is a hypertensive state which may terminate in uremia. The knowledge of this not too uncommon end result of chronic infection should encourage one to employ the best methods available to control urinary infections in their initial stages and prevent them from becoming deep seated and chronic. Successful results may be expected in a large proportion of patients if there is good bilateral renal function, if the patient is in the afebrile stage at the time of treatment, if there are no obstructive anomalies of the urinary tract, and if the details of treatment are followed carefully.

Northwest Medicine, Seattle

36 333 370 (Oct.) 1937

- Neglected Professional Duties D C Ray Pocatello Idaho—p 331
Acute Lower Abdomen in the Female N F Miller, Ann Arbor, Mich.—p 334
Progress in Pediatrics D M Dayton Tacoma Wash—p 338
Suction Pressure Treatments in Impaired Circulation of Extremities Lucy Hobson New York—p 342
Oxygen and Carbon Dioxide Therapy Basic Principles and Practical Applications G A Dodds and C R Jensen Seattle—p 345
Infection Treated with Sulfanilamide W D Clark Battleground Wash—p 349
Spinal Anesthesia with Especial Reference to Dosage H S Atwood Yakima Wash—p 350
Ligation of Internal Saphenous Vein Outline of Varicose Vein Treatment E A Nixon Seattle—p 352

Ohio State Medical Journal, Columbus

33 1069 1188 (Oct.) 1937

- Useful Hints in Treatment of Gastro Intestinal Disease W C Alcott Rochester Minn—p 1085
Splenectomy in Relation to Disorders of Blood R L Haden Cleveland—p 1093
*Artificial Fever Therapy of Sydenham's Chorea H W Kendall and W M Simpson, Dayton—p 1097
Rupture of the Uterus D J Davies Cincinnati—p 1101
Pneumococcal Meningitis Type II with Recovery Due to Hyperthermia? R W Frankmann and J V Stewart Massillon—p 1107
Some Clinical Aspects of Arthritis W A McConkey Canton—p 111
Significance of Pyuria J K Nealon Newark—p 1114
Treatment of Carcinoma of Bladder by 400 Kilovolts Roentgen Therapy A H Schumacher and D Steel Cleveland—p 1116
Protamine Insulin and Diabetic Children S D Edelman and R I Fried Columbus—p 1119
Interpretation of Serum Tests in Artificially Sensitized Man Report of Cases Giving Accelerated Reactions with Negative Tests I L Lorain—p 1121

Artificial Fever Therapy of Sydenham's Chorea—Kendall and Simpson have subjected five patients suffering from Sydenham's chorea to artificial fever therapy using the Kettering hypertherm. All experienced prompt cessation of choreiform movements. None have had recurrence. There were four females and one male. The duration of chorea prior to administration of artificial fever ranged from ten days to ten weeks in the four severe cases, and in one mild case the chorea had been repeated attacks for one year before artificial fever therapy was given. These patients were given from one to three treatments, the average single fever session being three hours between 104 and 105 F. The period of observation extended

from six weeks to four and one-half years. In addition to the choreiform movements, three patients showed evidence of carditis as demonstrated by mitral murmurs, electrocardiographic changes and tachycardia. The mitral murmurs disappeared in all following treatment. The normal cardiac rate and rhythm was restored. Two patients had polyarticular arthritis, which also responded promptly to artificial fever. No other form of treatment was employed in these cases. All the children tolerated the treatments well, none were injured in any way by the artificial fever treatments.

Oklahoma State Medical Assn. Journal, McAlester

30 351 390 (Oct.) 1937

- Regimented Rationale in Treatment of Rheumatic Disease W K Ishmael and E D McBride Oklahoma City—p 351
- Value of Localizing Reactions in Atrophic or Chronic Infectious Arthritis Nonspecific Type E Goldfain Oklahoma City—p 359
- Ectopic Pregnancy H G Crawford Bartlesville—p 362
- Appendicitis in Children M J Searle Tulsa—p 366
- Tumors of the Jaws J F Burton Oklahoma City—p 369
- Treatment of Gonorrhea in the Male D W Branham Oklahoma City—p 374

Pennsylvania Medical Journal, Harrisburg

41 178 (Oct.) 1937

- Acute Appendicitis in Infants P A McCarthy, Philadelphia and J L Magrath Upper Darby—p 5
- Insulin Shock Therapy in Schizophrenia F J Braceland and D W Hastings Philadelphia—p 7
- Successful Treatment of Schizophrenia in a General Hospital Resume of Technic Employed C Rea and C M Kershner York—p 14
- *Tetanus with Total Hemolysis Report of Case W E B Hall St Joseph Mo—p 16
- The Modern Approach to Early Diagnosis in Tuberculosis Illustrated by a Case Finding Campaign in 12 000 Pennsylvania School Children S O Pruitt Philadelphia—p 22
- Primary Carcinoma of Duodenum J O Woods New Castle—p 27
- Retrotracheal Thyroid Case Report J A Soffel Pittsburgh—p 31
- Etiologic and Diagnostic Study of 200 Ward Patients J C Doane and M S Jacobs Philadelphia—p 33
- Acute Osteomyelitis of Lumbar Vertebrae Report of Case J S Donaldson Elizabethtown—p 36
- The Present Conception of Anemia Relation of Hypoproteinemia to Macrocytic Anemia H M Ray Pittsburgh—p 39

Tetanus with Total Hemolysis—Hall cites a case of total blood hemolysis, following the intravenous injection of tetanus antitoxin serum, in a young girl exhibiting symptoms of tetanus eleven and one-half days after a firecracker burn which had necessitated administration of prophylactic serum. At the time of hospitalization the girl was found not to be sensitive to the serum, but she was desensitized as a precaution. The explanation is believed to be (1) a hemolysin release through a replaced amboceptor-antiamboceptor combination in the presence of amboceptor sensitization, the serum antilysin acting as the amboceptor, (2) an unusual specific Arthus reaction through red cell fixation of sensitizing hemolysin-antihemolysin elements or (3) a combination of the two.

Psychiatric Quarterly, Utica, N Y

11 531 716 (Oct.) 1937

- Position of Occupational Therapist in a Plan of Research in Schizophrenia N D C Lewis New York—p 537
- Psychiatric Implications in Occupational Therapy L E Hinsie New York—p 544
- Dementia Praecox Presentable P Milics Kings Park N Y—p 552
- Intracranial Neoplasms Their Incidence and Mental Manifestations Study Based on Clinical and Autopsy Records of 2000 Patients at St Elizabeths Hospital J L Hoffman Washington D C—p 561
- Streptococcal Meningitis with Recovery in Case of General Paresis J M Derby and M Zeifert Brooklyn—p 576
- Epileptic Psychosis Clinical Study I Schnap Kings Park N Y—p 582
- The Psychology of Headache Case Studied Experimentally Jule Eisenbud New York—p 592
- Racial Variation in Blood Cerebrospinal Fluid Barrier of Normal Children F A Mettler M Robinson H G Stelling C M Burpee and M A Amdur Augusta Ga—p 620
- Objective Signs of Invalidity of Stanford Binet Tests Z A Piotrowski New York—p 623
- Report on Tuberculosis Survey Recently Completed at Marcy State Hospital D A Harrison Utica N Y and G Schein Marcy N Y—p 637
- Fire Prevention in State Hospitals C W Hutchings Marcy N Y—p 643
- Studies in Obsessive Ruminative Tension States I Etiology Dynamics and Genesis of Psychasthenia L F Woolley Towson Md—p 654
- Technical Approaches Used in Study and Treatment of Emotional Problems in Children Part V The Playroom J Louise Despert New York—p 677

Public Health Reports, Washington, D C

52 1475 1518 (Oct 22) 1937

- Studies on Oxyuriasis VI Incidence of Oxyuriasis in 1 272 Persons in Washington D C, with Notes on Diagnosis Eloise B Cram Myrna F Jones Lucy Reardon and Mabelle O Nolan—p 1480

South Carolina Medical Assn Journal, Greenville

33 229 254 (Oct.) 1937

- Practical Points in Treatment of Coronary Disease L T Gager, Columbia—p 229
- Psychoneurosis Following Injury C O Bates Greenville—p 233
- Synopsis of Congenital Hemolytic Jaundice Preliminary Report of Two Cases in Identical Twins P H Culbreath Ellenton—p 238

33 255 280 (Nov.) 1937

- The Physician and the Public Health L Banov Charleston—p 255
- Some Observations on Osteomyelitis of Maxilla in Infants Report of Case J W Jervey Jr Greenville—p 258
- What Does Your Profession Mean to You? C B Epps Sumter—p 262

Southwestern Medicine, Phoenix, Ariz

21 339 376 (Oct.) 1937

- Care of the New Born M K Wylder Albuquerque N M—p 339
- Therapeutic Value of Iodized Oil Intratracheally in Bronchiectasis R M Balyeat Oklahoma City—p 341
- *Diagnosis of Blood Dyscrasias and Allied Diseases H Jeter, Oklahoma City—p 343
- Cervix and Some of Its Problems J H Patterson Phoenix Ariz—p 348
- The Present Management of Cancer of Rectum W H Daniel Los Angeles—p 352
- Treatment of Skin Cancer E C Fox Dallas Texas—p 354
- Chronic Fluorine Intoxication Report of Mottled Enamel in a Dog R deR Barondes San Francisco—p 357
- Gonorrhea Treatment and Its Inadequacy Gonococci Acquired by New Born in Nose Mouth Urethra and Vagina as Well as Eyes Gonococci Seem to Cause Arthritis and Rheumatism Are Gonococci Like Syphilis Passed on to the Third and Fourth Generations? G S Chapin Los Angeles—p 363

Diagnosis of Blood Dyscrasias and Allied Diseases—Jeter mentions certain aids in the diagnosis, management and treatment of blood dyscrasias and allied diseases. Routine bone marrow biopsy is probably not indicated but should be made in cases in which other hematologic studies do not lead to satisfactory diagnoses. Neutropenia of various degrees and associated with various conditions are frequently observed. Neutropenia has been found in typhoid, malaria, poisoning from heavy metals, roentgen and radium therapy, pancytopenia of the bone marrow associated with aplastic anemia, and various other conditions. The reticulocyte count by a special vital stain has become necessary in the study of anemias. Syphilis is frequently in the background in occult anemia and, if the diagnosis can be established and antisyphilitic treatment instituted, recovery is more complete than could be expected by symptomatic treatment of the anemia. Acute, subacute and chronic nephritis has been observed to be an obscure cause of obvious anemia. Other chronic diseases such as tuberculosis, diseases of the gastro intestinal tract, particularly amebiasis, polyposis and diverticulitis fall into this group. In simple achlorhydric anemia (so-called chronic microcytic anemia and sometimes called idiopathic hypochromic anemia), if no clue to the etiology can be established and achlorhydria is present along with a normal quantity and quality of leukocytes and thrombocytes, large doses of iron and hydrochloric acid are administered. The results are frequently most spectacular. The diagnosis of hemolytic jaundice, or the so-called congenital familial icterus, is established by chronicity, history of heredity, icterus, splenomegaly, increased fragility of erythrocytes and high reticulocyte count, and recently, as pointed out by Hadcn, the erythrocytes tend to be more spheroid in character than in any other type of anemia. The sickle cell trait which occurs in a certain percentage of normal Negroes is not to be confused with sickle cell anemia. Chlorosis is conspicuous because of the extreme low color index and the characteristic color of the skin. In the author's experience syphilis chemical poisoning roentgen therapy and, occasionally, chronic low grade infections are the causes of aplastic anemia. Too frequently the aplasia of the bone marrow is a terminal condition and elimination of the cause is too late. Hemorrhagic purpura is often, if not always, a syndrome of symptoms with characteristic changes in the blood secondary to some ordinarily obscure primary condition.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Bristol Medico-Chirurgical Journal

54 191 238 (Autumn) 1937

- Nutrition and Tuberculosis J. A. Nixon—p. 191
 Burden Mental Research Trust Its Present and Future R. J. A. Berry—p. 201
 Sulfanilamide in Treatment E. Watson Williams—p. 209
 Prontosil in Obstetrics H. J. Drew Smythe—p. 217
 Ham Green Hospital Extensions The Opening Address Delivered on September 23, 1937 W. W. Jameson—p. 221

British Journal of Physical Medicine, London

12 115 138 (Oct.) 1937

- Value of Ultraviolet Light in Industrial Districts Eva Morton—p. 117
 Impedance of Human Body to Direct Current and Low Frequency Alternating Current W. E. Boyd and M. R. Gavin—p. 119
 Constant Galvanic Current A. P. Cawadiaz—p. 125

British Journal of Radiology, London

10 701 764 (Oct.) 1937

- Some Abnormalities of Pharynx, Esophagus and Diaphragm (Including Diaphragmatic Hernia) T. P. Dunhill—p. 702
 Radiation Dosimetry Part II L. H. Gray—p. 721
 *Congenital Undescended Cecum A. C. Jordan—p. 743
 (I) A Nomogram for Radiography (II) an Exposure Calculator for Radiography A. B. MacLean—p. 753
 A Compact Neon Tube Radium Detector P. R. Palfster—p. 759

Congenital Undescended Cecum—Jordan states that congenitally undescended cecums include at least five varieties.

1 The cecum that has descended as far as the upper part of the right iliac fossa, the ascending colon hangs down vertically, then turns vertically up to the hepatic flexure, thus forming a letter J. 2 The cecum that has descended as far as the front of the right kidney, the ascending colon forms a U, with the right limb shorter than the left. 3 The cecum the descent of which is arrested at some point along the lower border of the liver, the ascending colon forms a U with equal limbs, the hepatic flexure is a little farther to the left than normal. 4 The cecum that instead of moving to the right from its earlier epigastric position descends in the middle line, remaining well forward and free from attachments (hence very mobile) leaving the whole right side of the abdomen to the small intestine. 5 The cecum that remains in its earliest position high in the epigastrium well forward in front of the lower part of the diaphragm. The congenitally undescended cecum causes a high degree of discomfort, while the cecum is heavily loaded thus normal, thus a different from the usual state of affairs in the abdomen. It is the surgeon should realize fully that he is dealing with a case in which the terminal ileum and have no intestinal covering and no mesentery.

British Medical Journal, London

2 1 101 111

- Cholecystitis J. W. Nixon—p. 101
 Cholecystography Efficiency of the Graham Cole Test F. G. Hardman—p. 733
 Magnesium Trisilicate N. Mutch—p. 735
 *Tuberculosis of Cervical Lymphatic Gland R. Reid and M. C. Wilkinson—p. 740
 Relation of Blood Group to the Individual to Blood Diseases and Neoplasms K. I. E. Micklethwait—p. 743

Tuberculosis of Cervical Lymphatic Glands—While Reid and Wilkinson recognize that different methods may be employed with excellent results by different workers they outline a method of treatment based on the pathology of tuberculosis of the cervical lymphatic glands that has achieved a measure of success in 119 consecutive cases. The treatment consisted of a combination of constitutional and operative measures, but constitutional treatment has been the fundamental one. In the majority of cases surgical extirpation of the tuberculous glands was a primary measure. The cases were divided into three groups: (1) cases with periaadenitis, (2) cases with adenitis, and (3) cases with adenitis and periaadenitis. In the first group attempts at cure were made by the use of a local disease

is insufficient. Constitutional treatment, therefore, is of paramount importance to prevent progress or recrudescence of the disease. The chief factors in constitutional treatment are rest (restraint from all activity), open air, a liberal balanced diet with an adequate supply of vitamin and heliotherapy. Tonsillar and pharyngeal sepsis in the pathology of tuberculous glands of the neck is of utmost importance. The treatment of a tuberculous abscess arising from a gland depends on whether superadded secondary infection has occurred or not. If there is secondary infection the pus should be evacuated by incision and free drainage should be established. If there is no secondary infection an attempt should be made to treat the abscess by aspiration. The success of aspiration depends on the employment of a technic in which the needle is passed into the cavity of the abscess through and across muscle. The route of the needle is thus closed by the approximation of the muscular fibers. The operation for radical excision of tuberculous glands of the neck is a controversial field in surgery. The main contraindication for the operation is active disease with periaadenitis. The group 1 cases treated by conservative means required on an average 67 months to complete a clinical cure, and twenty-four of twenty-nine gave a good result on discharge. The operative forty-five cases were under general treatment for an average period of 29 months before they passed from this group to group 2 or 3, and were then ready for operation. After operation one month of treatment was given to allow satisfactory healing of the wound. There were good results in all the operative cases. Satisfactory results were obtained in the six cases in group 2 under constitutional treatment. They were retained in the sanatorium for an average period of 32 months. The sixteen cases treated by operation all gave good results and were kept under constitutional treatment for an average period of two months before operation. The statistics of the thirteen cases in group 3 give no useful information, as the group contains such a variety of cases of residual infection that no generalization can be made about them. But the immediate results following treatment in all groups were good except in five cases of group 1. Ten patients did not complete the treatment. It is the authors' opinion that the nasopharyngeal lymphatic tissue is the probable path of entry for the tubercle bacillus in this disease. Tuberculosis of the cervical lymphatic glands is a local disease which does not give rise to metastatic lesions.

Lancet, London

2 781 834 (Oct. 2) 1937

- Reflections on the Health Campaign Dawson—p. 781
 Deafness Prevention versus Palliation A. Tumarkin—p. 787
 Gold Treatment of Arthritis Review of 900 Cases S. J. Hartfall, H. G. Garland and W. Goldie—p. 784
 *Inquiry into Relapse Following Sympathectomy H. T. Simmons and D. Sheehan—p. 788
 Bacteriostatic Action of α -Aminobenzenesulfonamide on Hemolytic Streptococci H. Finklestone, Sayless, C. G. Paine and L. B. Patrick—p. 792
 Electrocardiographic Changes of a T₂ Pattern in Pericardial Lesions and in Stab Wounds of the Heart P. Wood—p. 796
 Effects of Thyrotropic Hormone of Anterior Pituitary in Man E. F. Scowen—p. 799

"Relapse" Following Sympathectomy—In a series of patients in whom the cervicothoracic ganglion had been removed or its preganglionic fibers divided, Simmons and Sheehan studied the effect of sweating tests, ulnar nerve block and the administration of dilute epinephrine intravenously. The results do not support the explanations of the cause of relapse after sympathectomy offered by Lewis in England and White in America. It has been found that the relapse coincides with the reappearance of vasoconstrictor fibers in the ulnar nerve. It is suggested that regeneration of sympathetic fibers must explain their reappearance.

Chinese Medical Journal, Peiping

52 317 478 (Sept.) 1937

- Edema in Pregnancy W. C. W. Nixon—p. 317
 Blood Pressure in Pregnancy L. Ride—p. 329
 Treatment of Kala Azar with Solustibosan A. New Antimony Compound E. B. Struthers and L. C. Lin—p. 335
 Sdt. 561 in Treatment of Kala Azar T. M. Yates—p. 339
 Salmonella Infection Study of Seventeen Cases of Salmonella typhimurium Septicemia C. H. Huang, H. C. Chang and V. T. Lee—p. 345

Journal de Médecine de Lyon

18 549 576 (Oct 20) 1937

- *Treatment of Pulmonary Tuberculosis with Gold Salts P Courmont
H Gardere and P Rivollier—p 549
- *Mode of Action of Gold Salts in Pulmonary Tuberculosis P Courmont
and H Gardere—p 559

Treatment of Pulmonary Tuberculosis with Gold Salts—Courmont and his associates point out that the opinions about the efficacy and the method of the treatment of tuberculosis by means of gold salts are contradictory. This is partly due to the fact that the statistics are not comparable as regards the selection of the cases, the type of gold preparation that is employed, the method of treatment and so on. The authors present observations on a material in which these factors were the same. They report about 117 adults from the same clinical department. Only one type of gold salt was used and the preparation was administered intravenously in doses of 0.1 Gm. Among thirty-four patients in whom the treatment was completed, the temperature was reduced in 56 per cent of the cases, the weight was increased in 57 per cent, the sputum was reduced in 50 per cent, the bacilli disappeared in 44 per cent, there was roentgenologic improvement in 25 per cent and the mortality was 23 per cent. On the other hand, in the fifty-four patients who did not receive the gold therapy and in the twenty-nine in whom the treatment was not completed, the corresponding figures were extremely unfavorable and the mortality was twice as high as in the treated group. The favorable action of the treatment cannot be disputed. The authors never observed a severe accident. To be sure, they administered only small doses and strictly adhered to certain rules. In a series of sixty-eight cases they observed twenty-nine with mild and generally early complications, but these accidents by themselves never caused serious consequences. The treatment was at once stopped in the twenty-nine cases as soon as the complications developed. It is of great interest to note that in the patients who developed these early complications the mortality was twice as high as in those in whom the treatment was completed, and the improvements were small in number. As all these cases were in the beginning entirely comparable to those which were submitted to the complete treatment, it may be deduced that the extreme sensitivity to the first injections of the gold preparation indicates that the general resistance of these patients is much lower. From this the authors draw the conclusions that (1) it is inadvisable to continue the gold treatment in these sensitive patients and (2) that the prognosis is quite often unfavorable in the sensitive patients. These points and the loss of weight are the most important ones to be watched in the course of the treatment. The authors remain advocates of the small doses which produce good results and are not followed by grave accidents, the mild reaction which they may elicit makes it possible to determine the sensitivity of the patients.

Mode of Action of Gold Salts in Pulmonary Tuberculosis—Courmont and Gardere show that the study of the mode of action of gold salts in pulmonary tuberculosis is of great importance, because a knowledge of the action mechanism is a guide in conducting the treatment and helps to avoid grave accidents. This action mechanism is complex. Factors that must play a part are (1) the bactericidal power of the gold salts and the increase in the natural bactericidal power of the organism (serum urine), which was proved by experiments, (2) the reticulo endothelial system and the organs, such as liver and spleen, which contain much of this tissue and (3) the focal reactions against the tuberculous lesions. These reactions must remain slight to be useful, if they do not, they provoke complications. The use of small doses (0.05 or 0.1 Gm per week) seems sufficient to induce and sustain the beneficial reaction with the least complications. The pathogenesis of the accidents is likewise extremely complex. They may be due to intoxication (too strong or accumulated doses) with toxic lesions of the liver and kidney, to idiosyncrasy (unforeseen spontaneous sensitivity), or to sensitization acquired by the injections. The mode of action of this sensitization is still being disputed. It is made evident in certain cases by cutaneous tests and by passive sensitization. An important part is played by the general hypersensitivity of the tuberculous organism produced by the tuberculosis itself, which influences all those processes and accidents. The authors conclude that all

these processes are complex and interrelated, that extreme caution is necessary in the use of gold salts, that it is advisable to administer only small doses, and that the treatment should be stopped as soon as complications develop.

Paris Medical

2 317 328 (Oct 23) 1937

- *New Sign of Appendicitis Contraction of Adductors of Right Side
C Richet and H Netter—p 317
- Cardiac Aspects of Prolonged Malignant Endocarditis D Olmer and
A X Jouve—p 319
- *Anemia in Course of Prolonged Treatment with Barbituric Preparation
in Epileptic Patients Several Cases G Maillard and Mlle Jammet
—p 325

Contraction of Adductors as Sign of Appendicitis—Richet and Netter point out that of all the physical signs of appendicitis the most evident is contraction. According to the cases it is located solely or chiefly in the right iliac fossa, in the lumbo-iliac space, above the crural arch, under the liver, sometimes on the left side, sometimes generalized. Occasionally it is the psoas that is contracted. But whatever may be the severity of the appendicitis there often exists the contraction of the adductors of the right thigh, which is easily made evident. The patient is lying on the back with the mouth open, thighs half flexed, heels flat on the bed and knees touching, the muscular relaxation must be complete. Placing a hand or, better, a finger on the internal edge of each knee, one exerts a pressure directed from within outward, tending to separate the knees one from the other and to press them down with their external surface on the bed, as if one attempted the limitation of the abduction in a beginning coxalgia. It is necessary to use a mild pressure constantly and equally on the two sides. This maneuver is not painful. Exceptionally it is possible to detect an intense contraction of the adductors of the right thigh, the member remaining in an almost vertical plane, while the left knee is easily pressed outward. Nearly always there is a slight contraction, a simple hypertonia, the abduction being less marked on the right than on the left, at the same time there is a sensation of an opposing resistance of the member, which one feels better in repeating the maneuver once or twice, but always with lightness. If the manipulation is made with force, the result is always negative. One of the authors has systematically searched for this sign and has detected it in about 40 per cent of the cases of appendicitis. The hypertonia of the adductors of the right thigh is especially frequent in the acute forms of appendicitis. It is found with equal frequency in adults and in children. The sign has symptomatologic value, because systematic search for it in other disorders on the right side of the abdomen never revealed it. In doubtful cases it has often made it possible for the authors to decide the diagnosis in favor of an appendicitis. In attempting to explain the sign, the authors direct attention to the motor innervation of the adductors.

Anemia in Course of Treatment with Phenobarbital—Having observed anemia in two epileptic patients who had been treated for a long time with phenobarbital, Maillard and Jammet examined the blood of fifteen epileptic patients who had been treated with phenobarbital for several years. In eight of these patients they detected a more or less severe reduction in erythrocytes and also other changes. The authors describe the hemograms of these patients and state that the symptoms of anemia are often latent in these patients so that the existence of the anemia is disclosed only by an examination of the blood. The anemia could be counteracted by reducing the dose of phenobarbital and by treating the patients with liver extract.

Jahrbuch für Kinderheilkunde, Basel

150 164 (Sept) 1937

- Treatment of Rickets with Concentrated Viosterol H Bischoff—p 2
- *Significance and Prognosis of Spontaneous Pneumothorax During Childhood H Wissler—p 11
- Syndrome Accompanied by Generalized True or Spurious Platyspondylia J R Dreyfus—p 42

Spontaneous Pneumothorax During Childhood—On the basis of fifty-seven cases observed, Wissler discusses the clinical significance and the prognosis of spontaneous pneumothorax. He found that in the majority of cases the pneumothorax developed in the course of a pneumonia usually in the form of a pyopneumothorax. In two instances the spontaneous pneumo-

Beitrage zur pathologischen Anatomie, Jena

100 1 194 (Oct 1) 1937 Partial Index

State of Irritation L. Aschoff—p 1

*Osteitis Fibrosa and Parathyroids in Animal Experiment W. Eger—p 19

Modification of Shape of Facial Portion of Skull by Premature Unilateral

Ossification of Coronal Suture A. Materna—p 42

Allergic Hyperergic Appendicitis K. Heinemann—p 62

Question of Calcium Deposits in Giant Cells K. Zah—p 126

*Connection Between Pineal Body and Adrenal Cortex J. von Kup—p 137

White Pulmonary Infarct Pathogenesis and Further Development F. Niendorf—p 149

Formal Genesis of Congenital Micrognathia A. Giordano—p 169

Osteitis Fibrosa and Parathyroids in Animal Experiment—Eger shows that by inducing chronic lead intoxication in rats it is possible to elicit changes in the bones that can be compared with osteitis fibrosa in human subjects. The changes in the bones are accompanied regularly by an enlargement of the parathyroids. This enlargement of the parathyroids seems to be a secondary manifestation in a primary disturbance of the metabolism.

Connection Between Pineal Body and Adrenal Cortex—Von Kup gives the clinical history of a boy, aged $3\frac{1}{2}$ years, who exhibited physical, mental and particularly sexual prematurity, which apparently was connected with a hyperfunction of the adrenals or with the endocrine sequels of this hyperfunction. The boy died shortly after the extirpation of a large (830 Gm.) malignant adenoma of the left adrenal cortex. The necropsy revealed changes in the endocrine glands. There was an enlargement of the hypophysis. The pineal body, however, was subnormal in weight. In the pancreas there was hyperplasia of the glandular parenchyma to the detriment of the insular apparatus. The weight of the testes was increased. There was a generalized hypertrichosis. The author shows that the clinical history of the boy corresponds with the pathologic anatomic aspects and permits the following conclusions. There is a close, morphologically demonstrable connection between the function of the adenohypophysis and that of the adrenal cortex. The hyperfunction of the adrenal cortex and the endocrine results of this condition caused an increase of weight of the adenohypophysis. The author has previously pointed out that there is an antagonism between the adrenal cortex and the pineal body and as is well known, between the pineal body and the adenohypophysis. The antagonism between adrenal cortex and pineal body becomes manifest by way of the antagonism between the pineal body and the adenohypophysis that is, hyperfunction of the adrenal cortex causes enlargement (and evidently hyperfunction) of the adenohypophysis, which in turn exerts an inhibiting effect on the development of the pineal body. To the hyperfunction of the adenohypophysis must be ascribed the premature development of the gonads and with this the sexual prematurity. Thus there is also an indirect connection between the adrenal cortex and the gonads. The observations described here are corroborated by cases previously described and by animal experiments.

Munchener medizinische Wochenschrift, Munich

84 1561 1600 (Oct 1) 1937 Partial Index

*Further Experiences on Treatment of Massive Gastric Hemorrhages Without Restriction of Diet E. Meulengracht—p 1565

Treatment of Pneumonia with Vitamin C A. Vogl—p 1569

Danger of Anesthesia of Mucosa of Injured Male Urethra R. Knepper—p 1572

Oral Sepsis Case L. Walb—p 1573

Nonspecific Antitoxic Treatment of Infectious Diseases W. Stoeltzner—p 1573

Bridage for Hallux Valgus H. Schwan—p 1580

Treatment of Gastric Hemorrhages—Meulengracht reports that since 1931 he has treated massive gastric hemorrhages without restriction of diet. His experiences with this method of treatment were made in 368 cases of hematemesis or melena, resulting from acute or chronic ulcers. He found that the hemorrhage was not exacerbated when immediately thereafter the patients were given as much food as they desired. The diet is a purged one and the patients are given five meals daily. In addition they receive alkalis, atropine and iron. The patients are permitted to move in bed as much as they desire. Under the influence of this treatment the subjective condition of the patients is much better than under the former treatment with a gradually increasing ulcer diet. The patients regain their strength rapidly, regeneration of the blood sets in promptly

and the convalescence is shortened. Intake of food into the stomach does not exacerbate the hemorrhage. The mortality from gastric hemorrhage was greatly decreased by this treatment.

Danger of Anesthesia of Injured Male Urethra—Knepper points out that, although in case of an intact mucosa there is no toxic effect from the anesthetic which is introduced previous to cystoscopy, severe or even fatal intoxications have been known to occur in case of an injured mucosa of the urethra or when the mucosa was injured by the pressure of the syringe. It is characteristic for such cases that the signs of intoxication and even death follow rapidly, that is, almost immediately after the toxic substance enters the blood stream. This proves that the intoxication is the result of the direct entrance of the anesthetic into the blood stream, that is, there is practically an intravenous injection of the anesthetic. This is due to the fact that a true submucosa is absent in the mucosa of the urethra and a venous plexus is directly underneath the mucosa. Consequently, any injury that reaches below the mucosa involves an opening of the venous system. The author reports the history of a man, aged 57, who died immediately after anesthesia of the urethra. The necropsy revealed defects in the mucosa near a postgonorrheal urethral stricture and there was evidence that the anesthetic had entered the venous system of the corpus cavernosum. He admits that pressure might play a part in the involuntary injection into the urethral venous plexus, but he thinks that an anesthetic of the consistency of a thin fluid will enter openings into the venous system even in the absence of pressure. For this reason he decided to introduce the anesthetic in the form of a thick fluid. He recommends the following prescription: tragacanth 0.75 to 0.1, glycerin 10, pantocain 0.5 to 0.1, distilled water to 50. Anesthetization is begun ten minutes before cystoscopy and is entirely adequate for the intervention. The viscous character of the anesthetic not only prevents it from entering possible breaches in the urethral mucosa but also facilitates easy passage of the cystoscope.

Wiener Archiv fur innere Medizin, Vienna

31 113 168 (Sept 30) 1937

Blood Sugar and Water Thrust A. Visani—p 113

Blood Pressure Reaction and Cold Stimulation H. Brada and L. Feil—p 121

*Etiology of Menstrual Hemoptysis A. Sattler—p 129

*Occurrence of Weil's Disease in Vienna R. Fleckseder—p 139

Partial Pulmonary Collapse K. Strassler—p 155

Menstrual Hemoptysis—Sattler points out that it is well known that hemorrhages from the lung are especially frequent at the time of menstruation in women with pulmonary tuberculosis. Discussing the causes of the menstrual hemoptysis, the author describes a typical case. Repeated severe hemoptyses at the time of menstruation finally made an intervention necessary, which proved that adhesions which suspended a pulmonary cavity in the pneumothorax space and the enormous hyperemia of the lung and pleura at the time of menstruation were the chief causes of the menstrual hemoptysis. A control thoracoscopy during the intermenstrual period revealed that the severe hyperemia of the lung and pleura had subsided. From this observation the author concludes that a causal connection exists between excessive blood perfusion of the lung and the menstrual process.

Weil's Disease in Vienna—Fleckseder gives detailed histories of three out of six patients with Weil's disease who recently came up for observation in two Viennese hospitals. The first patient was a man aged 42, who frequently fished in the river and who had sustained slight abrasions while doing so. Following this he had Weil's disease with the typical fever curve, severe hepatic impairment, icterus, hemorrhagic diathesis and acute renal disorders with polyuria during the period when the fever subsided. The serum of the patient agglutinated *Spirochaeta icterogenes* with a titer of 1:1000. This case ended in recovery, but the other two had a fatal outcome. Both of the latter patients had been working on canals. In analyzing these cases and in reviewing the literature, the author noted a similarity between Weil's disease and another spirochetal disease, namely recurrent fever, cases of which he had observed during the war. In both disorders the following symptoms may appear: backache, muscular pains, particularly pains in the calves of the legs, severe cerebral symptoms, even delirium, severe conjunctival congestion and iritis, also recurrent periods

of fever, which apparently are connected with the life cycles of the two types of spirochetes. However, there are differences as well as similarities. For instance, in recurrent fever the splenic tumor is more pronounced than in the case in Weil's disease. The behavior of the causal agents differs in that in Weil's disease they are less numerous in the blood and in recurrent fever they are less numerous in the urine. Then there are differences as regards the morphology, serologic reaction and the animal pathogenicity. The author considers the differential diagnosis between Weil's disease and various forms of toxic icterus, pyelephlebitis, cholangitis and so on and discusses the prevention of the disease. He points out that physicians and nurses who take care of patients with Weil's disease, and laboratory workers who handle materials from such patients, must be extremely careful: the latter should wear rubber gloves and eye protectors. In view of the fact that Weil's disease is disseminated by rats, attention should be given to the extermination of rats in canals, slaughter houses, markets and mines. For persons who are especially exposed to infection, such as canal workers, the author recommends protective vaccination with killed spirochetes.

Wiener medizinische Wochenschrift, Vienna

87 1099 1126 (Oct. 23) 1937

- *Cardiac Defects During Childhood. A. F. Hecht—p. 1099
Clinical Aspects of Hypophysial Diseases. W. Raab—p. 1103
Trachea and Aorta. S. Kreuzfuchs—p. 1106
Medicinal Shock Therapy of Schizophrenia. M. Sakel—p. 1108

Cardiac Defects During Childhood.—Hecht discusses the present status of the diagnosis and treatment of cardiac defects in children. He cites two cases in which the cardiac disturbance was of traumatic origin, both being cases of cardiac concussion. He points out that the second case is of especial interest to physicians supervising athletic activities. Further he takes up the various forms of endocarditis, particularly rheumatic endocarditis and the valvular insufficiencies. He says that it is best to begin the treatment of new endocarditis with an energetic medication with salicylic acid, but that good results have been obtained also with aminopyrine. Treatment with digitalis is usually not advisable in endocarditis. In the myocardial defects electrocardiography is often helpful. To be sure, there are cases in which the electrocardiogram remains normal to the fatal end. On the other hand, electrocardiographic changes that develop in the course of diphtheria, scarlet fever and influenza are often reversible. The arrhythmias are discussed. It is pointed out that extrasystoles may occur in the absence of functional impairment. Disturbances in the stimulus conduction system are always a partial manifestation of cardiac defects. Pericarditis presents no unusual features during childhood. The congenital cardiac defect is usually characterized by severe cyanosis. In the latter the treatment is only symptomatic. Following a discussion of the symptoms of cardiac insufficiency, namely dyspnea, hepatic swelling and edemas, the author evaluates strophanthin and digitalis therapy. Then he discusses the use of diuretics and the dietetic therapy of edemas. If hydrothorax, ascites and hydropericardium are accompanied by severe disturbances in compensation they necessitate puncture, severe edemas yield only to capillary drainage. If such severe cases develop during childhood the prognosis as regards life expectancy is much more unfavorable than if it develops in later life.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

51 4919 5018 (Oct. 16) 1937. Partial Index

- Pathogenesis of Cancer of Corpus Uteri. I. A. Wijnbeek—p. 4926
*Heredity of Albinism. J. Sanders—p. 4932
*New Points of View in Experimental Cancer Research. A. L. Hagedoorn and A. C. Hagedoorn—p. 4938
Eclampsia. D. G. Wesseling—p. 4950

Heredity of Albinism.—Sanders reports that questionnaires sent to ophthalmologists disclosed 216 cases of albinism in 140 families. Investigations on this material revealed that the heredity of albinism is of the monogenic type. The author directs especial attention to two families in which both the dominant albinism and the recessive albinism were present. He thinks that these are nearly always phenotypically normal.

New Points of View in Research on Cancer.—The Hagedoorns show that in most cases in which hereditary developmental factors influence a disease it is found that a single gene is more or less the determining factor. In cases of cryptorchidism, anemia, deafness and other disorders were found to follow this rule. However, carcinoma of the mammary gland of mice is an exception. In cross breeding experiments between strains with and without cancer, it was found that the female offspring of the females of the group with cancer develop cancer, whereas the female offspring of the males of the same strain do not. From these observations Little and Korteweg draw the conclusion that this is a case of extrachromosomal heredity. However, repeated back crossings with males of the cancer strain finally result in the production of females that do develop mammary cancer, a fact which contradicts the aforementioned conclusion. The authors direct attention to experiments in which it was shown that the animals of the cancer strains do not thrive well, that they are poor mothers and that the young grow poorly. The only way to raise the young to normal, healthy mice was to have them suckled by normal mice. Many of these fostering experiments confirmed the hypothesis that cancer of the breast is induced by the fact that the young mice are suckled by females of the cancer strains. In the females of a cancerous strain which were suckled by their mothers, the incidence of cancer was 83.2 per cent, but in females of the same strain which were suckled by normal animals the incidence of cancer was only 4.9 per cent. Moreover, some young females of strains that were free from cancer later developed cancer when they had been suckled by females of the cancerous strain. The authors suggest experiments that will reveal whether cancer is produced by the presence in the milk of a cancer inducing substance or by the lack of an important substance. They conclude that the so-called hereditary factor in cancer of the breast can be counteracted by a simple intervention during early childhood.

Hygiea, Stockholm

99 705 736 (Oct. 15) 1937

- Remarks on Gastric Hypachylia and Achylia. Treatment and Complications. E. Forsgren—p. 705
*Further Remarks on Anorectal Stricture in Venereal Lymphogranuloma. G. Redell—p. 713

Anorectal Stricture in Venereal Lymphogranuloma.—Redell's patient, an ex-sailor, aged 32, with rectal stricture and venereal lymphogranuloma, had had marked symptoms of colitis for four years, the administration of Frei antigen intravenously according to Hellerstrom, was followed by remarkable improvement. An earlier case of anorectal stricture on the basis of venereal lymphogranuloma in which satisfactory results were obtained by this method of treatment was reported by the author in *Hygiea* 98 417 (July 15) 1936.

Ugeskrift for Læger, Copenhagen

99 993 1016 (Sept. 23) 1937

- *Chronic Acetophenetidin Intoxication. Utilization of Blood in Acetophenetidin Cyanosis. Ventilation of Question of Liver Cirrhosis on Basis of Protracted Intoxication with Aniline Derivative. T. Esparsen—p. 993
Experiences with Ergotamine Tartrate in Migraine. A. Gullhaugen—p. 999

Acetophenetidin Intoxication.—Espersen reviews cases of chronic acetophenetidin intoxication from the literature, discusses the different conceptions of the cause of cyanosis in intoxication with aniline derivatives and reports a case of fatal chronic acetophenetidin poisoning in a woman, aged 39, who for three years had taken 15 Gm. of acetophenetidin daily (in all, between 1,600 and 1,700 Gm.). He says that spectroscopically about three weeks after the last dose of acetophenetidin there was neither methemoglobinemia nor sulfhemoglobinemia. Determination of the oxygen capacity according to Van Slyke and Hiller, about four weeks after the last intake of acetophenetidin, revealed no decrease in active oxygen binding in spite of constant cyanosis, and the arteriovenous oxygen difference was normal. The conception is thus supported that the cyanosis depends on the presence of dark oxygenized para-amino acid combinations. The liver cirrhosis found post mortem is to be interpreted as a result of the long continued acetophenetidin intoxication.

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OTOLARYNGOLOGY IN RELATION TO GENERAL MEDICINE

BURT R. SHURLY, M.D.

DETROIT

This subject was selected from deductions forcibly impressed on me during ten years of experience in examinations of more than 2,300 candidates before the American Board of Otolaryngology. That problems of otolaryngology are clearly related to general medicine has been recognized from time to time in the literature and in practice. The earlier otolaryngologists numbered quite a few men who were trained in general medicine first and in otolaryngology later, whereas the modern specialism concentrates the training for a number of years on otolaryngology and to a considerable extent ignores the related and borderline problems.

Postgraduate instruction in this country is an evolutionary training, and the best opportunities are offered in a comparatively few centers. In the effort to stress the highly technical surgical procedures, the allied specialties, such as neurology and internal medicine, are given scanty consideration. The examinations given by the board indicate that the candidates are splendidly prepared in the diagnosis and treatment of sinus disease, pathologic tonsils and adenoids and in the problems of mastoiditis and understand admirably the treatment of diseases of the throat and acute and chronic suppurative conditions in these localities. But the larynx, the thyroid, infections of the respiratory tract and the problems of internal medicine as related to the ear, nose and throat are passed over with lessened interest and limited knowledge. In order that a model curriculum in graduate and postgraduate study may be attained, a plea is made for broader consideration of the borderline problems and their definite relationship.

The patient now comes to the otolaryngologist more and more frequently through his own choice or through the advice of a friend rather than as a referred patient from the general practitioner. Under the newer psychology, the layman selects his specialist himself, in this he is largely influenced by hearsay evidence of the specialist's ability from various channels of indirect advertising. The information that the certified specialist is especially qualified to treat a particular disease is not yet widely disseminated, it will attain popular understanding within the next decade. The choice of the layman may therefore be erroneous in that he makes his own diagnosis and rushes to the specialist he thinks best fitted to care for his trouble.

Many acute infections beginning in the nose and throat and ear may become problems of thoracic disease, infection of the brain, arthritis, syphilis, thyroid disease, pneumonia, tuberculosis, furunculosis, cardiac disease, dyscrasia of the blood or an exanthem, therefore a more extensive knowledge than that supplied by a narrow curriculum is essential. The pendulum has swung so far that the otolaryngologist now limits his knowledge and work to the extent that many serious problems associated with the local conditions are in danger of being overlooked without proper investigation. The economic factor also enters into modern medical investigation, the patient finds himself unable to engage from three to five or more specialists to arrive at a correct interpretation of his condition. It is true that the clinic of a large hospital offers a rotating service of cooperation which will cover the individual problem in many cases. It is equally true that not one of these several specialists has either time or opportunity to become personally familiar with the inner life or personal history of the patient who is usually seen for merely a few minutes of examination and observation.

Many cases of pneumonia or tuberculosis in their incipient stages are passed over by the specialist who has no particular interest in diseases of the chest, which extend beyond his field as organized, limited and approved by the general set-up of specialism.

Under the present regime a physician is popularly sanctioned to be an eye, ear, nose and throat specialist, or an ear, nose and throat specialist and bronchoscopist, with full recognition as such. By the same token a man is not expected to be a certificated neurologist, although the specialties of ophthalmology and neurology are intimately related. Certifying boards are not in favor of issuing more than one or at most two certificates to the same person. The requirements for knowledge in the related specialties must therefore be developed in the postgraduate centers of instruction. How much should an otolaryngologist know about borderline medicine and surgery and of those specialties particularly related to his own? Time and convenience have forced an artificial and arbitrary division of disease within limits that are not founded on pathologic consideration. The eye and ear was a specialty of convenience, quite unrelated, in fact, whereas the specialty of respiratory diseases of the nose, throat and chest has much in common, pathologically, bacteriologically and clinically. The latter had a chair in the medical schools of the Mississippi Valley for many years. Ear, nose and throat offer a logical line of work, which has a reasonable basis of association, but, as disease by extension is so frequent, why should the specialist in this line not be interested and trained also in such problems of internal medicine as are found so frequently

on every candidate for operation on the nose or throat, and the positive reactions have a surprising occurrence in totally unexpected cases. This test, before a submucous operation, is a protection to the patient and the physician, and the same rule holds good for all operative work that does not fall within the realm of emergency operating. While it is true that under the modern system of therapeutics the tertiary lesions of syphilis, as found in the mediastinum, the lymphatic glands and the nervous system, have diminished it is only fair to the patient that any infection of syphilis so readily determined, should not be overlooked. If otolaryngologists are to join in eliminating the ravages of syphilis and in promoting the proper prophylactic measures, Kahn and Wassermann tests must ultimately be made a routine procedure. If the cost of the examination is beyond the financial means of the patient, I believe the department of health should take care of this contagious disease. If this is state medicine, I am for that much of it—to carry preventive medicine into the field of public protection.

It is a simple matter for one who delves in surgery exclusively to become a therapeutic nihilist and scorn the various therapeutic measures that have stood the test of time and practice. The many examinations conducted by the American Board of Otolaryngology show that the importance of pulse, temperature and respiration is too often disregarded. The consideration of the patient as a psychologic unit, as a member of the human family, with the tremendously influential hysterical, psychic, emotional and hereditary factors, may be lost in the study of the case. The anxiety to demonstrate pathologic tonsils sinus infection, acute mastoiditis and the necessity of operation may sometimes cause the otolaryngologist to ignore the underlying peculiarities of the individual patient. This fact is elementary, but in all clinics or hospitals eternal vigilance is necessary to uncover all possible disease at the onset.

Preventive and general medicine with dermatology and otolaryngology, can work together to advantage in this regard. The century-old practice of clinical medicine cannot be separated completely from otolaryngology. The latter evolved from general medicine, separated rapidly under the enormous demands for greater skill in technique, and yet the cycle cannot be completed until the pendulum swings back, as it must in all great movements, to its proper place, and fair consideration is given to all the various scientific facts which influence both the diagnosis and the treatment.

The American Board of Otolaryngology recognizes that the specialty cannot be practiced exclusively but that a 10 to 20 per cent margin for borderline work and related general problems is admissible.

62 West Adams Street

ABSTRACT OF DISCUSSION

DR FRANK R. SPENCER, Boulder, Colo. One hears occasionally of primary laryngeal tuberculosis, the diagnosis having been made without a thorough physical examination and an x-ray examination of the chest. Stubborn diseases of the ears, nose and throat may be much less obscure after a Wassermann test. A biopsy may decide whether a tumor is benign or malignant, and the degree of malignancy according to Broder's classification. The etiology of a paresis or paralysis of the recurrent laryngeal nerve can rarely be determined by the laryngologist. The internist is needed. Fürstenberg's recent article shows the importance of intracranial lesions in the etiology particularly of unilateral laryngeal paralyses and the

help that may be rendered by the neurologist. Recently I saw a patient who lost 18 pounds (8 Kg.) after the successful removal of a malignant tumor. A thorough reexamination and urinalysis showed that he had diabetes. With a proper diet and insulin he has improved rapidly. The malignant tumor was properly diagnosed and removed with an excellent result. The diabetes was not even suspected by the clinical laboratory in an excellent hospital. This will also show that mistakes may be made on either side. In the West we see patients with a diagnosis of pulmonary tuberculosis when the correct diagnosis of bronchiectasis should have been made. This is important because so many patients have sinus disease causing the bronchiectasis. Dr Shurly wants otolaryngologists to think of patients in terms of other organs and other diseases. He wants to see specialists broadly trained. The eagerness with which younger otolaryngologists are seeking graduate courses at the annual meetings of the Academy and their desire to know more about gross and microscopic pathologic changes are very encouraging signs of the times and lead all of us to believe that Dr Shurly will realize his ambition.

DR W. P. WHERRY, Omaha. It is customary to classify medical students as being in the upper middle or lower third of the class and efficiency graphs are drawn by groups. If it were possible to classify practitioners of medicine in the same manner, the errors herein summarized as a graph of the specialty as a whole might fall in the group constituting the lower two thirds. The records now being accumulated by various examining boards will, I am sure, corroborate this assumption. The evaluation of general medicine and of otolaryngology are but a partial yardstick of usable knowledge—the full yardstick is determined by (1) the training background and (2) that innate urge in some to look on this training factor as only an introduction to the threshold of knowledge. In this connection, in the past twelve years it has been my privilege to analyze the results of examination and credential records of 2,400 candidates appearing before the Board of Otolaryngology. I have been impressed with figures showing the groups having the least failure percentage, namely, the three, four and five year residences and the assistant trained divisions. I question whether Dr Shurly, in his analysis of otolaryngologists as a whole has considered the better trained group. Perhaps as the poorer trained sections are eliminated from the scheme of graduate education the graph of otolaryngology (now seemingly dominant) will be redrawn to a higher level. In other words the answer to Dr Shurly's inquiry lies in a consistent program of increasing training facilities, bettering the graduate student output by circumscribing the acceptance into the specialty of those poorly trained.

DR CLAUDE P. BROWN, Philadelphia. One of the difficulties experienced by the clinical pathologists has been due to the physician selecting such examinations as are in agreement with his clinical experience. Nevertheless there is a definite trend to call the clinical pathologist as a consultant and such examinations are made as he considers essential. Bacteriologic examinations supplementing blood examinations certainly are worth while. Normally there may be no bacteria or only a few staphylococci as the nasal secretions are bacteriostatic. When streptococci, pneumococci or *Staphylococcus aureus* are present they are of great clinical importance. Throat cultures of normal patients often show streptococci usually of the viridans type, *Staphylococcus albus* and *Micrococcus catarrhalis*, less frequently pneumococci, hemolytic streptococci and *Staphylococcus aureus*, the latter three frequently pointing to definite infection. As otolaryngology finds itself requiring more training in general medicine so must it also depend on clinical pathology for blood, bacteriologic, serologic and chemical studies and their interpretation. Some otolaryngologists will no doubt be interested in the use of vaccine in ear and sinus infections due to type III pneumococcus. As reported by Dr Goldman, I would suggest that the bacteriologist use broth of from 0.1 to 0.2 per cent instead of 1 per cent dextrose because the acid produced in the latter will kill the pneumococcus before maximum growth occurs also that an eighteen hour period be the time limit. The smears should show mostly gram-positive organisms and, if not, even a shorter period of growth should be used other-

wise maximum immunizing effects will not result from the use of the vaccines. I would make a plea for wider use of vaccines. If vaccines are prepared from organisms such as pneumococci, kept virulent by animal (mouse) passage, no one needs to be much troubled, because the same results will be obtained as if they were prepared directly from the patients' cultures.

DR CHARLES L. BROWN, Philadelphia. I feel that Dr Shurly's paper is most important and especially significant at this time. There have been numerous references throughout the paper and the attendant discussions indicating the importance of adequate special and general training after graduation from the medical school, and also there have been pointed out a lesser number of so-called failures among those men who have been so trained. As Dr Shurly's paper has brought out the comprehensive correlation of internal medicine with otolaryngology, it behooves internists to try to provide the type of training that has been anticipated in the words given by the speakers here. I feel that internists have a difficult problem in doing that. The man seeking qualification in otolaryngology does not wish nor does it seem necessary for him to spend an extensive amount of time in an appointment in internal medicine. Yet in the ordinary hospital organization it is difficult to offer training in internal medicine and nose and throat work at the same time, unless some liaison is established between these two departments. The rotating internship has made this possible in a measure but is unsatisfactory because of the short period of service, it being more adequately accomplished in the two year rotating internship with at least a six months service in medicine. Many of us in institutions are confronted with the problem of providing adequate training for internists as required by the Board of Certification. Since the goal of the majority is the practice of medicine there is merit to a three year plan in which the first year after internship is largely clinical, the second year largely investigative and for special study in the fundamental sciences, allied with medicine, and the third year again largely clinical, the principles learned in the two previous years being applied just before one anchors oneself in practice. Possibly some such arrangement as that might be very valuable in the training of the otolaryngologist, and during this intermediary year a part of the time could be given over to a liaison with the department of internal medicine.

DR EUGENE M. LANDIS, Philadelphia. In the discussion, when a man is oriented in the field of post-nasal disease, it is a common-sense thing to say that a man will be better off if he is trained in the field of internal medicine than if he is trained in the field of otolaryngology. That is, a man who is trained in the field of internal medicine will be better off than a man who is trained in the field of otolaryngology. This is because a man who is trained in the field of internal medicine will be able to handle the problems of internal medicine, which are the problems of the majority of the medical profession. A man who is trained in the field of otolaryngology will be able to handle the problems of otolaryngology, which are the problems of a minority of the medical profession. Therefore, a man who is trained in the field of internal medicine will be better off than a man who is trained in the field of otolaryngology. This is the reason why I feel that Dr Shurly's paper is most important and especially significant at this time.

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OBSERVATIONS ON ACACIA THERAPY IN NEPHROSIS

EUGENE M. LANDIS, MD

PHILADELPHIA

The use of acacia in the symptomatic treatment of nephrotic edema is based on sound physiologic principles, since this particular form of edema is associated directly with massive albuminuria and consequent reduction of the concentration of protein in the circulating blood plasma. The lowered colloid osmotic pressure of the blood disturbs the normal mechanism by which fluid is transported and distributed throughout the body. The resulting massive and persistent anasarca often resists the action of the usual diuretics and renders the chronically nephrotic patient especially subject to streptococcal or pneumococcal infection.

The cause of the hypoproteinemia is not definitely known, it is generally supposed, however, to result from defective formation of protein associated with conspicuous loss of protein in the urine. Theoretically the frequent transfusion of plasma or whole blood is the best form of replacement therapy and is sometimes practicable in treating children. In the treatment of adults, however, when from 20 to 30 Gm of protein is being lost daily in the urine, the protein that can be added in a 500 cc transfusion may be completely excreted within twelve to forty-eight hours. Therefore attention has been directed toward the use of acacia, a colloid which is able to replace temporarily the lacking plasma protein.

Although the intravenous injection of acacia solution had been used for many years as a substitute for blood transfusion in shock or hemorrhage, its application to the treatment of nephrotic edema began with a study by Hartmann and Senn¹ in 1932. Clinical observations have shown that the injection of acacia is not entirely without danger. Austin and McGuinness² reported an alarming increase in blood volume following a single large injection. Maytum and Magath³ raised the question of possible anaphylactic reactions. Undesirable deposition of acacia in the liver has been described by Dick, Warweg and Andersch⁴.

Nevertheless, further studies on acacia therapy in adults seemed desirable owing to the occasionally striking relief of otherwise intractable anasarca. The rapid disappearance of nephrotic edema and subsequently decreased albuminuria and cast excretion led to the suggestion in some clinical reports⁵ that acacia may at times hasten healing of the renal lesion in addition to its purely physical action on the movement of fluid from the tissue spaces to the blood stream. The direct effects of acacia therapy on albuminuria, cylindruria and hematuria in renal disease have so far not been studied in detail. The observations to be reported concern then

Read before the Section on Pharmacology and Therapeutics, Eighty-Eighth Annual Session of the American Medical Association, Atlantic City, N. J., June 10, 1937.

From the Departments of Medicine and Pharmacology, University of Pennsylvania School of Medicine. The expenses of these studies were in large part defrayed from a grant by the Commonwealth Fund.

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3. Maytum, C. K. and Magath, T. B. Sensitivity to Acacia Transfusion. M. A. 39, 2351 (Dec. 31), 1932.

4. Dick, M. W., Warweg, E. and Andersch, J. M. A. 105, 637 (Nov. 31), 1933. The Treatment of Nephrosis. J. A. M. A. 105, 637 (Nov. 31), 1933.

5. Barch, J. H. and Boyd, D. M. Hypoproteinemia in Nephrosis. Its Treatment with Acacia. Am. J. Med. Sc. 189, 177 (1935). Hartmann and Senn¹.

selves primarily with Addis counts of the urinary sediment before, during and after the injection of acacia in relatively small repeated doses

Acacia was administered to six patients with nephrotic anasarca and, in far smaller dosage, to two patients with mild glomerulonephritis but no edema. Of the six patients with anasarca, two presented the typical picture of lipid nephrosis without clinical or urinary evidence of glomerulonephritis. One patient had amyloid nephrosis and in three the nephrotic syndrome appeared in the course of early subacute glomerulonephritis with microscopic hematuria, very slightly diminished kidney function, at most a minor and transient nitrogen retention, little or no hypertension, and no cardiac involvement

METHODS

For some days or weeks prior to the institution of acacia therapy, the edematous patients had been on a salt poor, high protein, high caloric diet for the most part under close supervision in a metabolic ward. Fluid intake was restricted and in five instances numerous diuretics had been tried without success. The blood pressure was taken twice daily. Twenty-four hour urine specimens were collected continuously. Fluid intake was kept constant so that, except during diuresis, large changes in specific gravity might be avoided. Albuminuria and chloride excretion were determined daily. By means of the Addis technic the excretion of casts, erythrocytes and leukocytes was estimated at frequent intervals. Urea clearances were determined daily over twenty-four hour periods, as described in a previous paper.⁶ Preliminary skin tests for sensitivity to acacia were negative in all six patients. Commercial 30 per cent acacia was diluted with four parts of distilled water, so that the fluid injected intravenously contained 6 per cent acacia in 0.9 per cent sodium chloride solution. After an initial test dose of from 5 to 10 Gm, subsequent daily doses ranged from 20 to 30 Gm until a total of from 120 to 180 Gm had been given over periods ranging from six to nine days. In agreement with the experience of others, it was found that reactions occurred occasionally unless the undiluted solution as supplied commercially was clear and yellow, or at most light amber, in color. Very slow intravenous injection and the administration of anytal or morphine seemed to assist in avoiding reactions

OBSERVATIONS

The daily injection of from 20 to 30 Gm of acacia (in conjunction with restriction of fluid and salt) produced a satisfactory diuresis and temporary freedom from edema in five of the six cases of nephrotic anasarca. In one case the injection of 140 Gm over a period of six days produced by itself no significant diuresis, but the subsequent administration of theophylline with ethylcynadiminc, U S P (aminophylline) was followed by a copious diuresis, although the latter drug when used prior to acacia therapy had not affected the flow of urine appreciably.

The excretion of chloride in the urine, usually less than 1 Gm in twenty-four hours in patients with nephrotic anasarca, increased temporarily during acacia diuresis to as much as 18 Gm daily. The total amount of chloride excreted during the period of weight loss was roughly equal to the amount of chloride in the

injected acacia solution (4.5 Gm of sodium chloride for each 30 Gm of acacia) plus that of the excreted edema fluid. When diuresis ceased, chloride excretion again returned to its previous low level until dietary salt restriction was made less rigid. The blood pressure was normal, or slightly below normal, in four cases, in two cases, both of subacute glomerulonephritis, the systolic blood pressure was never above 150 mm of mercury. The daily injection of 20 to 30 Gm of acacia did not elevate blood pressure measurably. This contrasts with the effect of a single large dose, which can produce an alarming transient hypertension.²

In none of the six cases was there any clear evidence that the administration of acacia affected hematuria, cylindruria or albuminuria significantly. Chart 1 summarizes observations, characteristic of the group, made during the treatment of a woman, aged 27, with a typical initial attack of lipid nephrosis without clinical evidence of glomerulonephritis. On admission the patient presented massive peripheral edema, pleural effusion and ascites. The body weight ranged from 165 to 170 pounds (75 to 77 Kg), approximately 30 pounds

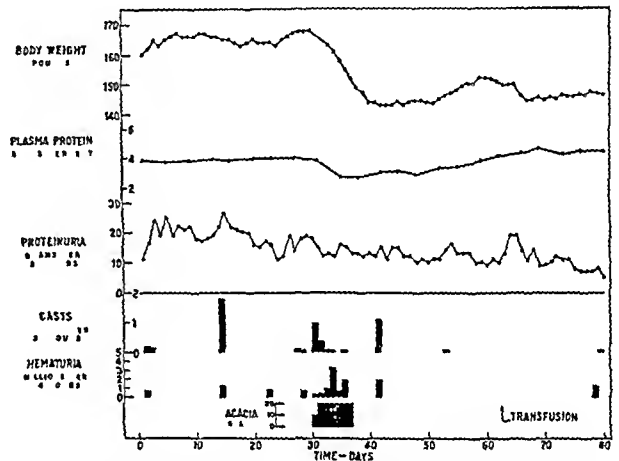


Chart 1—Effect of acacia on body weight, plasma protein percentage, proteinuria and urinary sediment of a patient with lipid nephrosis

(136 Kg) above her normal weight. The urinary output was less than 200 cc in twenty-four hours. The blood cholesterol was over 600 mg per hundred cubic centimeters and the urine contained doubly refractile lipid bodies. The blood pressure, urea clearance and blood urea nitrogen were normal. As shown to the left in chart 1, the proteinuria ranged from 11 to 27 Gm in twenty-four hours, with a plasma protein concentration of 3.8 Gm per hundred cubic centimeters. Approximately 200,000 casts and 0.7 million red cells were excreted in twenty-four hours.

A diet high in protein and total calories, but low in salt and fluid content, was given continuously throughout the period of hospitalization. During the first thirty days ammonium chloride, thyroid substance and urea in full dosage failed to affect the body weight appreciably. A small area of cellulitis then developed in the right lumbar region. Fear that this infection might spread led to the administration of acacia.

After sensitivity had been excluded, an initial dose of 10 Gm was followed by 20 Gm daily (as shown at bottom of chart 1) until a total of 130 Gm had been injected over a period of seven days. A satisfactory diuresis followed and body weight decreased by 24 pounds (11 Kg) in ten days. Simultaneously, with the onset of diuresis, the plasma protein percentage fell

6 Landis E N, Elom K A, Bott P A and Shiels E H. Observations on Sodium Chloride Restriction and Urea Clearance in Renal Insufficiency. *J Clin Investigation* 14: 225 (Sept) 1935.

rapidly from 40 to 29 Gm per hundred cubic centimeters and then rose slowly after the end of diuresis to reach 41 within thirty days after the injection of acacia was started. Proteinuria, which on admission had been as high as 25 Gm in twenty-four hours, was slightly less than 10 Gm in twenty-four hours on discharge, having decreased slowly and regularly without showing any change that could be referred to acacia therapy (chart 1). The excretion of casts and erythrocytes was not modified in any striking manner during or after acacia therapy. Erythrocyte excretion may have increased slightly and temporarily during the diuresis, but the change was not great and, in any event, did not persist after the diuresis was complete. Blood pressure, blood urea nitrogen and urea clearance (not charted) also showed no significant change during or after acacia therapy.

The effects of acacia were temporary in that fluid reaccumulated unless the plasma protein approached the normal level shortly after diuresis ceased. Thus, as shown in chart 1, the body weight began to increase slowly twenty days after diuresis ended. At this point a blood transfusion was followed by renewed diuresis and the slight residual peripheral edema disappeared. The patient, whose urinary signs persisted, was discharged on a diet high in protein, total calories and vitamins. Edema did not recur, the plasma protein percentage returned to normal and one year later the urine was normal by Addis count and there were no signs of an active renal lesion.

That acacia therapy affects the fluid balance only temporarily is illustrated also by the tendency for edema to return after weeks or months, as the disease again becomes active. One patient, described in full elsewhere,⁸ suffered from subacute glomerulonephritis in the course of which four major attacks of nephrotic

and fourth attacks of edema in this patient were associated with milder grades of hypoproteinemia and were relieved simply by salt restriction and purine diuretics. The renal lesion, in this case a definite glomerulonephritis, remained intermittently active after both injections of acacia. As in the other cases studied, although diuresis was induced there was no evidence from counts that the acacia had affected the underlying renal lesion either beneficially or deleteriously.

It has been known for some time that acacia modifies the properties of the circulating erythrocytes, the surfaces of which are presumably coated by adsorption. The sedimentation rate is increased,⁹ oxygen combining power is modified,¹⁰ and hemolysis becomes more difficult.¹¹ It seemed

possible that adsorption of acacia by renal cells or capillaries might in some way modify the character of the urinary sediment. Therefore, small amounts of acacia were administered to two patients with renal disease but without edema, to study the possible effect on hematuria, albuminuria and cylindruria complicated by diuresis.

Chart 2 summarizes an observation on a patient recovering from acute glomerulonephritis. The blood pressure, originally elevated, had been normal for a period of two weeks before the observations were begun. Tonsillectomy was performed on the ninth day, as shown at the bottom of the chart. Acacia in doses of from 2 to 3 Gm was given daily for eleven days. These injections had no demonstrable effect on the blood pressure, proteinuria, cylindruria, hematuria or leukocyte excretion. So far as could be ascertained, the added colloid passed through the kidneys as an inert foreign body. Similar results were obtained in a patient with active subacute glomerulonephritis, as shown in chart 3. Again the repeated administration of acacia in small doses did not modify blood pressure or the excretion of formed elements in the urine.

COMMENT

Amberson¹¹ has demonstrated the degree to which acacia may take the place of plasma proteins. In dogs it has been possible to reduce the concentration of plasma proteins to 0.05 per cent by repeated plasma pheresis, provided the removed plasma was replaced by 6 per cent acacia in physiologic salt solution. The animals remained in good condition and showed no

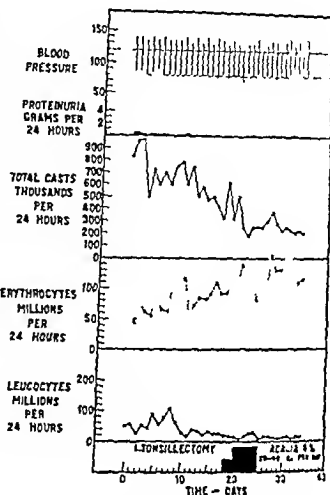
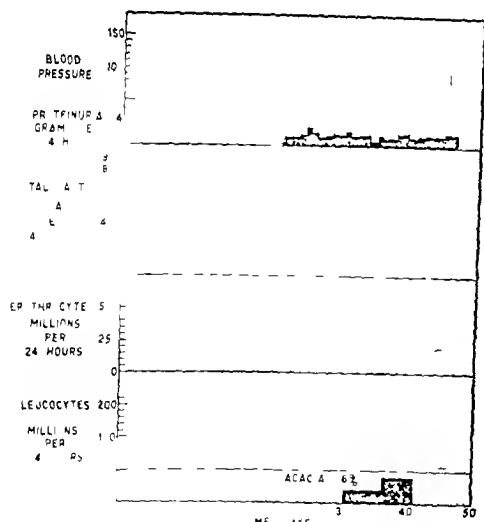


Chart 3—Effect of acacia on blood pressure, proteinuria and urinary sediment of a patient with subacute (active) glomerulonephritis.



and urinary

In treating with severe, induce an administered series of immediate injections the third chronic in

8 Lucia S. P. and Brown J. W. Suspension Stability of F₂ 22-189 (Oct) 1934

9 Christie A. Phthal N. M. and Olney Mary P. F₂ 22-189 (Oct) 1934

10 Walker M. A. Tenth Normal Hydrochloric Acid as D₂ Counting Leukocytes After Infusion of Solution of Acacia Am J C-Path 2:347 (July) 1932

11 Amberson W. R. Blood Substitutes Biol Rev 12:111

most slight edema. In treating nephrotic children, Hartmann and Senn¹ advocated the use of relatively large doses of acacia, namely, from 1 to 2 Gm per kilogram of ideal body weight, repeated if necessary. By calculation this dose should raise the colloid osmotic pressure of the blood to 17 cm of water—the so-called edema level. Austin and McGuinness,² however, observed a dangerous increase in blood volume when this dosage was used in a young adult and suggested that acacia induces diuresis primarily by withdrawing fluid from the edematous tissues and increasing blood volume temporarily. If this is true, diuresis might occur with doses considerably smaller than those advocated by Hartmann.

The observations here reported are in accord with this interpretation in that significant diuresis sometimes began as early as the third or fourth day after only 60 to 80 Gm of acacia had been given. Even if increase in blood volume and loss of acacia from the blood stream are left out of account, this dose would be too small to raise the colloid osmotic pressure of the blood to the "edema level." Rapid decrease of plasma protein concentration and hemoglobin percentage provide additional indirect evidence that blood volume was increased by relatively small doses of acacia.

In these observations acacia was used only in association with rigid salt restriction, which may have increased the effectiveness of the added colloid to some extent. Synergistic action between acacia and the ordinary diuretics seems possible. In one case theophylline with ethylenediamine, U S P, used alone produced no diuresis. Subsequently, after 140 Gm of acacia had been injected without response, the administration of theophylline with ethylenediamine, U S P, in the same dosage was followed by a copious diuresis. It is possible that small doses of acacia, in combination with other diuretics, will prove more reliable and less dangerous than large doses of acacia alone. Definite evidence on this point is, however, still lacking.

The cautious administration of acacia by repeated daily injections of from 20 to 30 Gm appears to be relatively safe and, in combination with salt restriction, has induced diuresis even when the plasma proteins were extremely low. The failure to observe any effect, irritative or curative, on the renal lesion itself agrees with the conclusions of Huffman,¹² who made routine urine studies before and after acacia was administered for hemorrhage and shock in patients without primary renal disease. The colloid is apparently excreted as an inert foreign body even by the diseased kidney, its only effect being the physical one of inducing diuresis when the colloid is present in the blood in sufficient concentration. According to Dick and his associates,⁴ the use of acacia in very large amounts does not raise the blood level in proportion to the dose, because as the concentration of acacia in the blood approaches a certain maximum, which may vary from one person to another, the excess acacia is merely stored in the tissues. Repeated administration of small doses makes it possible to limit the total amount given if diuresis appears early and to discontinue injections if undesirable effects are observed. The danger of suddenly increasing blood volume is avoided and there is time for adaptation. It is probable that, if diuresis has not begun by the time 150 Gm has been given to an adult, little is to be gained by administering larger doses.

In treating nephrotic edema, the usual diuretics should be tried first, since they are in general less apt to produce undesirable side effects. Acacia was given to our six patients for definite indications. In one case it was used because of a threatening skin infection, other diuretics having been tried without success. In the others, rapidly increasing anasarca resisted other therapy and rendered it imperative to induce diuresis promptly or else resort to mechanical drainage or to one of the mercurial diuretics. It is generally agreed that mechanical drainage is hazardous owing to the greater danger of infection in nephrotic patients. Opinion is divided concerning the desirability of using mercurial diuretics in treating a condition characterized by conspicuous tubular degeneration.

The permanent relief of nephrotic edema depends, of course, on the rate at which plasma proteins are formed and the rate at which protein is lost in the urine. According to available evidence persisting improvement after acacia therapy cannot be ascribed to any specific effect of the colloid itself on the renal lesion. Relief of edema does, however, reduce the danger of infection and may favor the development of a spontaneous remission by relieving the anorexia and the gastro-intestinal disturbances that accompany persistent ascites.

SUMMARY

Acacia was administered in repeated daily doses of not more than 30 Gm to six patients with nephrotic edema, the total dosage being 180 Gm or less. In combination with a low fluid intake and rigid salt restriction, acacia produced a satisfactory diuresis in five of the six patients. In one patient acacia per se failed to induce diuresis but apparently increased the effectiveness of theophylline with ethylenediamine, U S P, as a diuretic.

Repeated Addis counts of the urinary sediment before, during and after the administration of acacia did not reveal any definite beneficial or deleterious action of this substance on the underlying renal lesion.

Small daily doses of acacia have so far not produced any change in blood pressure or any dangerous increase in blood volume. Though its diuretic effect is only symptomatic and temporary, acacia has been useful in treating persisting nephrotic edema in patients with marked hypoproteinemias, provided renal insufficiency, hypertension and cardiac failure are not complicating factors.

Before acacia is used, patients should be tested carefully for sensitivity. The total dose should be kept below the level at which marked deposition in tissues occurs. Undoubtedly the ordinary diuretic drugs are preferable if they are efficacious and acacia should be reserved for persistent, severe nephrotic edema that has, by test, resisted other therapy. In such selected cases acacia frequently provides symptomatic relief otherwise unobtainable and also assists in avoiding the dangerous infections to which patients with persisting nephrotic edema are subject.

ABSTRACT OF DISCUSSION

DR. A. R. BARNES, Rochester, Minn. Ever since Hartman in 1933 introduced the use of acacia in cases of edema with hypoproteinemias it has constituted a valuable adjunct to treatment in these cases. Hartman and Landis pointed out that other diuretic measures should be given a thorough trial first. In the original recommendation Hartman suggested the administration of enough acacia to raise the osmotic pressure to about the normal level. According to my experience, such

¹² Huffman, I. D. Solution of Acacia and Sodium Chloride in Hemorrhage and Shock. *J. A. M. A.* 93: 1696 (Nov. 30) 1929.

large doses have not been necessary, because I have found, as Dr Landis has shown here, that when the acacia treatment of this type of edema is successful the response is obtained from smaller doses. Binger and Goudsmith in the last few weeks have studied two cases which raised two interesting questions. These were both cases of lipemic hypoproteinemic edema. Both patients were carefully treated over a sufficient period with the usual diuretic measures, including a high protein diet, salt restriction, administration of salyrgan, administration of large amounts of potassium nitrate and raising the basal metabolic rate, without securing successful diuresis. The patients were then given acacia intravenously in a dose ranging from 15 to 2 Gm per kilogram of body weight. This resulted in a concentration of acacia in the blood of one of these patients of 0.6 Gm per hundred cubic centimeters. Following the administration of acacia in these amounts, a very slight diuresis was obtained. The day following the administration of the acacia, the patients were given salyrgan intravenously, which resulted in very satisfactory diuresis. The fact that satisfactory diuresis is obtained from smaller doses of acacia than those sufficient to bring the osmotic pressure to normal, and the experience that sometimes when one brings up the osmotic pressure satisfactory diuresis depends on the administration of additional diuretics, suggest that there are some factors in the production of diuresis other than the mere raising of osmotic pressure. As Amberson has shown, acacia administered intravenously is the most satisfactory artificial substitute for plasma. According to my experience, if carefully prepared and carefully administered, the drug can be given without untoward results. This presentation teaches us that we may obtain results from much smaller doses. It is a valuable contribution to the treatment of edema associated with hypoproteinemia.

THE PREVENTION AND MODIFICATION OF MEASLES

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BOSTON

Sizable decreases have taken place in recent years in the incidence of certain communicable diseases, notably enteric infections, tuberculosis and diphtheria; the incidence of other diseases among them measles has remained unchanged. Public health measures for the control of measles have been entirely inadequate. No satisfactory means of preventing it has been developed, although certain prophylactic measures, such as isolation of children and closing of child day camps, have had a considerable influence on the control of the disease. Nevertheless, the death rate from measles has been a steady decline, as exemplified by the figures for Massachusetts for the years 1920 to 1930 (table 1).

The diminution in deaths from measles may be due in part to the recognition that the disease is particularly dangerous in children of preschool age and that, although almost all persons sooner or later acquire measles, needless exposure, particularly of small children, is unwarranted and should be avoided. Reduction in the death rate may be further attributed to the wider recognition of the desirability of isolating patients with measles one from another. In years past it was customary in hospitals to segregate children with measles in large ward, for group isolation on the basis that they could not transmit the disease to other

coccus and patient B would be a carrier of a streptococcus, and, although it is true that they could not infect each other with measles, they could interchange their usual pharyngeal organisms. In homes, institutions and hospitals where patients with measles have been isolated individually, secondary infections of the respiratory tract have been noticeably less frequent.

The reduction in the incidence of nutritional disorders and deficiency diseases in children, together with improvement in housing conditions as well as extensive progress of child welfare work, has reduced the number of chronically ill, debilitated children, in whom measles found many of its victims.

Long time surveys of disease lead to the conclusion that the severity of certain infections runs in waves dependent in part on the diminished resistance of populations but also on unexplained variations in the virulence of the virus. That fluctuations in mass resistance to measles have been of some importance in the past is shown by descriptions of the severe forms of measles observed in countries and communities from which the disease had long been absent. The theory that it is the current recognition of the dangers of measles, together with improved child health, rather than the uncontrollable factors of cyclic virulence of the virus and of inherited immunity, which has caused the diminution in the death rate is supported to some extent by the change in the types of complications. Involvement of the respiratory tract, otitis media and mastoiditis are less frequent, and noma has become extremely rare. Activation of tuberculosis is less frequently observed, because of the lessened incidence of tuberculous infections, but the incidence of encephalitis, due presumably to the virus of measles itself rather than to a secondary invader, has apparently not been affected.

Attempts to isolate and cultivate the virus of measles have been largely unsuccessful, and dependable prophylactic or therapeutic procedures based on studies of specific etiologic agents have not been forthcoming. Experimental inoculation of human beings may be performed with success and once was used rather extensively.¹ Surprisingly small amounts of blood from patients ill with measles will on subcutaneous injection into normal children induce measles.² I have observed that the disease induced by inoculation differs in no way from the natural disease and does not individually run a lighter course. The attempts of Herrman³ to produce active immunity in infants under five months of age, while they still enjoyed immunity derived passively from the mother, by inoculating them intranasally with secretions from patients acutely ill with measles, represented an interesting step but one which has not been deemed practicable or even entirely safe. When the virus of measles can be successfully cultivated or can even be preserved for long periods to insure its freedom from other organisms or viruses, a trial of the inoculation of patients and subsequent partial immunization with human serum would appear to be justified. Pending the development of better methods of control, passive immunization with human immune bodies of children after they have been exposed to measles would appear to present the most useful procedure in

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Gentleman's Magazine & Historical Chronicle 28: 285, 1753. Vol. 1.
Oesterr. med. Wchnschr. 1: 1842.
2 Hektoen, Ludwig. J. Infect. Dis. 2: 238, 190. Hektoen, J. and Eggers, H. E. Experimental Measles in the Monkey with Reference to the Leucocytes. J. A. M. A. 57: 1833 (Dec. 2) 1911.
Black, A. P. Personal communication to the author. Phila. F. C. 1915.
3 Herrman, C. Arch. Pediat. 32: 503, 1915.
Trask, J. D. Jr. Experimental Measles. J. A. M. A. 77: 192 (J. 1921).

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the prevention or modification of the disease. Yet with complications occurring less frequently, because of better understanding of the dangers of measles, and with the death rate steadily declining, even this procedure need not be used indiscriminately.

Antibodies against measles are found in the blood of almost all patients who have recovered from the disease. The titer of these antibodies is greater in patients recently convalescent but in most persons apparently persists in protective quantities throughout life, possibly, it may be augmented somewhat by repeated exposure to patients with the active disease. The utilization of convalescent serum tried by Weisbecker,⁴ Cenci⁵ and others owes the impetus to its wide use to the reports of Nicolle and Conseil,⁶ Richardson and Connor⁷ and Degkwitz.⁸

Numerous confirmatory studies have established that serum taken from patients recently recovered from measles, administered by intramuscular injections in doses of 4 or 5 cc. to nonimmune exposed persons in the first few days following exposure, results in a temporary immunity in the recipient, preventing the development of measles from this exposure. If the serum is given late in the incubation period, the temporary immunity is inadequate to insure complete protection and a modified form of the disease ensues. In the modified type, the incubation period is often prolonged, this necessitates lengthening the quarantine period for children who have received the serum. The severity of the disease is reduced, the complications and sequelae are minimized and the attenuated attack usually results in permanent immunity. From the standpoint of public health, the desirable use of serum, especially in the case of normal healthy children who have been exposed, would be thus to induce modification of the disease. However, the degree of modification which can be effected and still permit the development of permanent immunity has not been defined. Debre⁹ has maintained that all the symptoms, though in a mild form, must appear if lasting immunity is to result.

When measles breaks out in an institution, hospital, school or convalescent home, modification would not appear to be desirable, rather, the immediate and complete eradication of the disease should be sought, since the attenuated form is still readily communicable and does not eliminate the necessary periods of quarantine. Furthermore, in hospitals many of the patients fall into the groups of acutely or chronically ill, debilitated, or very young children, for whom the fatality rate for measles is highest and who should therefore be protected if possible.

Certain hospitals have for a number of years used convalescent serum effectively in the control of measles. However, even in hospitals the use of convalescent serum has been limited by the lack of adequate supply, control of measles by this means in the general population would be entirely impracticable.

Adult immune serum and adult whole blood have been used as substitutes for convalescent serum¹⁰ on

the basis that adults who have experienced the disease retain antibodies capable of protecting other persons. The dose of adult serum must be much larger than that of convalescent serum (15 cc. of adult serum or 30 cc. of adult whole blood, as opposed to 4 or 5 cc. of convalescent serum). The results are less certain than when convalescent serum is used.

The results with the use of adult serum have led to the general acceptance of the observation that the blood (and possibly the tissues) of most urban adults contains the protective antibodies. Furthermore, if the mothers are immune, infants during the early months of their lives are also immune to measles, apparently by reason of the passage of antibodies from mother to fetus through the placenta. In addition to measles, the new-born infant is usually immune to poliomyelitis, scarlet fever, diphtheria and certain other diseases. The actual presence in the umbilical cord blood of the immune bodies to these diseases has been amply demonstrated.¹¹ These observations have formed the background of the investigations into the use of the human placenta and the blood contained in it as a source of antibodies against measles.

TABLE 1—Incidence of Measles in Massachusetts 1920-1936

Year	Case Rate	Death Rate
1920	878.3	9.1
1921	458.0	4.5
1922	583.5	5.5
1923	668.6	7.9
1924	640.0	4.0
1925	603.0	8.1
1926	719.8	8.8
1927	322.0	2.1
1928	980.0	6.3
1929	302.5	2.9
1930	637.8	3.2
1931	387.8	1.5
1932	460.9	1.5
1933	345.9	0.6
1934	1,032.8	2.1
1935	283.2	0.8
1936	641.4	0.8

It has been demonstrated that placental extract can be prepared on a large scale, furnishing an extensive source of measles serum in the form of human immune globulin for use in the prevention or modification of the disease.¹²

A comparison of the efficacy of adult serum, convalescent serum and placental extract in the prevention and modification of measles is shown in table 2. The figures are on exposures both in institutions and at home, so are not as rigid a test of the materials as

4 Weisbecker Ztschr f klin Med 30 312 1896
5 Cenci F Riv di clin pediat 5 1017 1907
6 Nicolle C and Conseil E Compt rend Acad d sc 171 160 1923
7 Richardson D L. and Connor Hilar. Immunization Against Measles J A M A 72 1046 (April 12) 1919
8 Degkwitz R Ztschr f Kinderh 25 134 (May) 1920 27 171 1920 Munchen med Wchnsch 67 649 1920 Monatschr f Kinderh 22 186 (Nov.) 1921 Deutsche med Wchnsch 48 26 (Jan 5) 1922
9 Debre R Arch f Kinderh 95 169 (Feb 5) 1932
10 Zingher Abraham Convalescent Whole Blood Plasma and Serum in Prophylaxis of Measles J A M A 82 1180 (April 12) 1924 Geriachi H Monatschr f Kinderh 28 236 1924

11 Fischl and Wunscheim Ztschr f Heilk 16 249 1895 Polano O Ztschr f Geburtsh u Gynak 53 456 1904 Von Groer F and Kassowitz K Ztschr f Immunitätsforsch u exper Therap 22 405 1914 ibid 23 108 1914 Kuttner Ann and Ratner Bret The Importance of Colostrum to the New Born Infant Am J Dis Child 25 413 (June) 1923 Toomey J A and August M H Studies in Scarlet Fever ibid 35 953 (Nov.) 1929 Paurz Johann and Csoma Esther Jahrb f Kinderh 126 181 (Jan.) 1930 Aycock W L and Kramer S D J Exper Med 52 457 (Oct.) 1930 Finf elstein G S Vrach delo 14 794 (Aug 31) 1931 abstr J A M A 98 92 (Jan 2) 1932 Jorge Ricardo Bull Office internat d hyg pub 24 978 (June) 1932 De Souza J S Arch de med d enf 35 633 (Nov.) 1932
12 McKhann C F and Chu F T J Infect Dis 52 268 (March April) 1933 Use of Placental Extract in Prevention and Modification of Measles Am J Dis Child 45 475 (March) 1933 McKhann C F Green A A and Coady Harriet J Pediat 6 603 (May) 1934 McKhann C F and Coady Harriet South M J 27 20 (Jan.) 1934 McKhann C F Green A A Eckles L E and Davies J A V Ann Int Med 9 388 (Oct.) 1935 McGarran E G County Wide Use of Immune Globulin in the Modification and Prevention of Measles J A M A 106 1781 (May 23) 1936 Laning G M and Moran T N J Michigan M Soc 34 772 (Dec.) 1935 abstr J A M A 106 498 (Feb 8) 1936 Huber H G Monatschr f Kinderh 65 446 1936 abstr J A M A 107 469 (Aug 8) 1936 Brincher J A H Lancet 1 103 (Jan 11) 1936

would be figures on a series of persons all known to have been intimately exposed to the disease. They do indicate that fewer failures are to be expected from the use of convalescent serum or placental extract than from the use of adult blood.

The dosage of placental extract as well as that of convalescent serum or adult blood may be influenced by several factors, notably potency, time of administration, age and size of patient and possibly degree of exposure. The only direct method of determining the potency of placental extract has proved to be to test each lot for its ability to prevent measles. The indirect method of using diphtheria antitoxin content as a measure of measles antibodies has been unsatisfactory because the diphtheria antitoxin is apparently segregated almost entirely in the pseudoglobulin fraction of the extract whereas the measles antibody is more generally distributed among the globulins. To base the dose on the nitrogen content of the extract has been a relatively satisfactory method of adjusting dose to potency.

The time of the administration of the antibody is undoubtedly important in determining whether prevention or modification will ensue. Larger doses of immune

In table 3 is shown a more detailed analysis of the results obtained in a study conducted jointly by the Department of Pediatrics, Harvard University Medical School, and the Massachusetts Department of Public Health on the use of immune globulin derived from the placenta in the prevention and modification of

TABLE 2—Comparison of the Efficacy of Adult Serum, Convalescent Serum and Placental Extract in the Prevention and Modification of Measles (All Types of Exposures) Based on Figures Collected from the Literature

Source of Immune Bodies	Number of Cases	Protected		Modified		Failed	
		Number	Per Cent	Number	Per Cent	Number	Per Cent
Adult serum	584	329	56.4	139	23.8	116	19.8
Convalescent serum	162	127	78.4	20	12.5	15	9.1
Placental extract	2740	1762	64.3	87	3.2	145	5.3

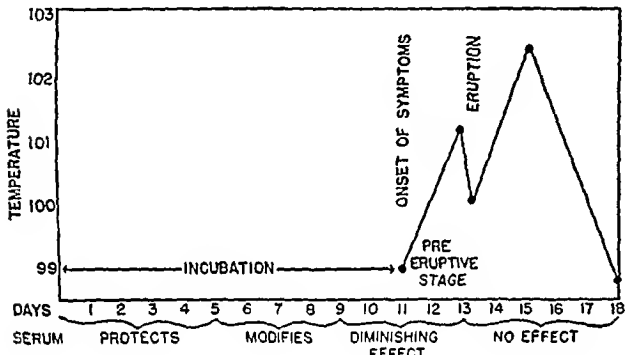


FIGURE 1—Course of infection

globulin in the treatment of measles is based on some extent but the results are not uniform. The appearance of the rash is usually observed in the first ten days after exposure. A moderate dose of 10 cc. of immune globulin given to a patient, together with a small dose of 5 cc. of immune globulin, larger doses of 20 cc. or more may be necessary in some cases of passive immunization. It is important to note that infection occurs much less frequently in children exposed in institutions than in those exposed to a brother or sister in the home. The economic status of the home is also important as exposure in crowded homes is especially intimate and therefore more likely to give rise to infection.

In the acceptance of the above is indicated the proportion of the incubation period in which prevention or modification of the disease may be expected to follow the injection of either convalescent serum or immune globulin. If serum is given in adequate amount during the first five days of the incubation period the child does not usually develop the disease.

measles. The figures for patients intimately exposed are particularly noteworthy, as they represent a rigid test of the efficacy of the material. The separation of the cases into groups according to the effect sought is less accurate, because the beginning of exposure often could not be definitely established. The administration of the placental extract to produce modification of the disease has presented a somewhat difficult problem in the adjustment of doses and the time of administration. Many children received extract either too early or in too large amounts and were completely protected, whereas in a few cases the extract was administered in inadequate amounts or too late, with failure to secure definite modification. Recently, dependable results have been obtained in securing modification by giving extract on the eighth day after exposure in doses ordinarily effective for prevention when given at an earlier date.

Of all children who received the extract without regard for the type of exposure, the proportion protected entirely was 64.3 per cent, a further 30.4 per cent showed modification, and 5.3 per cent showed failure of the extract to produce either protection or modification.

TABLE 3—Placental Extract in the Prevention or Modification of Measles (Intimate Exposures)

	Given to Protect				Given to Modify			
	Cases	Protected	Modified	Failed	Cases	Protected	Modified	Failed
Laboratory extract	52	302	222	32	110	10	2	11
Commercial extract	29	13	10	5	101	10	2	4
Total	81	315	232	37	211	20	4	15
Percentage		5.8	40.4	5.9		4.1	4.4	7.0

The extract in liquid form has retained its potency for upward of a year. Since the work of Flosdorf and Mudd and of Stokes,¹³ the lyophile process of preservation has been applied to some lots of the extract.

The administration of placental extract intramuscularly has been followed in some instances by local infection.

¹³ Flosdorf, F. W. and Mudd, Stuart J. Immunity 29, 1935. Stokes, Joseph Jr. and McGuinness, A. C. and McGuinness, A. C. Am. J. Dis. Child 50, 255 (Aug.) 1935.

DR CLIFFORD D. SWEET, Oakland, Calif. My experience indicates that measles may generally be prevented if one gets a good convalescent serum and gives it to the child immediately after exposure. When a child is in such a state of health that measles would be dangerous, immune serum should be injected at once. About five years ago I rather enthusiastically injected adult human immune serum for the purpose of modifying measles, injecting it about four days on the average, after known intimate exposure, and obtained a very large number of children who had modified measles, ranging from measles

minute. A polygraphic tracing showed a complete auriculoventricular dissociation. The patient died and necropsy revealed scattered areas of pneumonia. In serial sections there was no lesion of the bundle of His, except a slight increase in fibrous tissue. In the auriculoventricular node there was only slight fatty infiltration. No mention was made of sections through the right and left branches of the bundle of His but such studies are very important, especially when the auriculoventricular node and the bundle of His are entirely or practically normal. Yater, Cornell and Claytor have shown that bilateral lesions of the bundle branches are often the cause of auriculoventricular dissociation. Furthermore the advanced age of this patient, his illness, which was of several months' duration and the slight fibrosis of the bundle without acute changes all suggest that the disturbance in conduction might have been the result of arteriosclerosis. Neuhof's second patient was a man, aged 49 who had lobar pneumonia. One ounce (30 cc.) each of tincture of digitalis and digalen was given prior to the onset of the bradycardia, but no vomiting occurred. The temperature dropped by crisis on the fourteenth day and two days later the pulse rate suddenly fell to between 30 and 44 beats a minute. This rate persisted for a week, during which time the patient was in collapse and semistupor. Nevertheless, the pneumonia continued to resolve. No generalized convulsions occurred but periods of muscular twitchings, deep coma and a barely perceptible pulse were observed. These attacks averaged about one minute in duration. The polygrams were unsatisfactory but it seems highly probable that the patient had a complete heart block. A week after the bradycardia began, the patient suddenly showed marked improvement and his pulse rate was found to have returned to normal. The convalescence continued uneventfully except for a few short periods during which the bradycardia returned

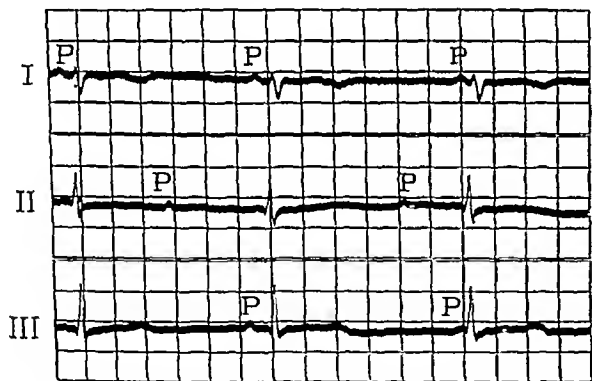


Fig. 1—Electrocardiogram taken two days after the onset of the bradycardia there is complete auriculoventricular dissociation auricular rate 40 and ventricular rate 47

Frommel and Thevenod⁶ reported a case in which there was electrocardiographic evidence of complete auriculoventricular dissociation during pneumonia. The patient was 78 years of age. Following recovery, a two to one block persisted. The authors believed that the block may have been present before the onset of the pneumonia. The age of the patient, the persistence

of the defective conduction and the administration of digitalis during the acute illness all make it very likely that the defect in conduction was the result of previous arteriosclerosis. Von Kiss and Wollek⁷ reported a case in which a boy, aged 4 years, had lobar pneumonia which involved the entire left lung. The fever terminated by crisis on the seventh day. The pulse rate fell to 76

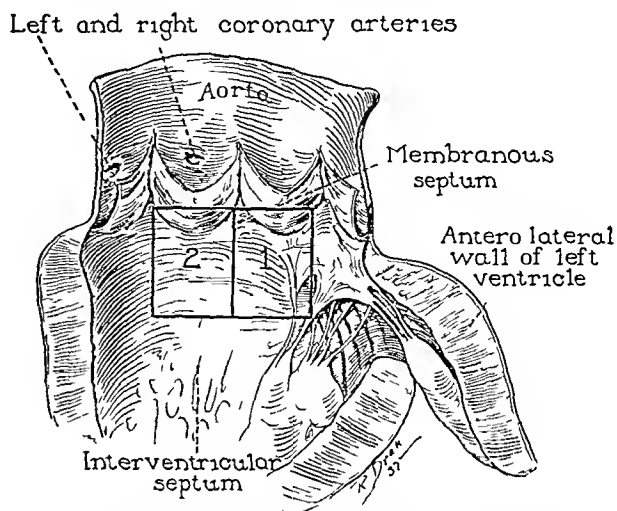


Fig. 2—Diagram of a heart showing the blocks removed for section. Block 1 includes the auriculoventricular node and the first portion of the bundle of His. Block 2 contains the remainder of the bundle of His and the proximal parts of its right and left branches.

and finally to 60 beats per minute and was irregular. The electrocardiogram revealed a PR interval of 0.25 second, there also were dropped beats. The child made a rapid recovery and the electrocardiogram returned to normal. When the patient resumed activity, the partial heart block promptly returned. Rest in bed for five weeks caused the arrhythmia to disappear permanently.

Yater, Cornell and Claytor, and Maham⁸ reviewed the literature on complete heart block with detailed histopathologic studies and found forty-eight acceptable cases. They failed to find a case in which the condition was associated with pneumonia or peritonitis.

It is hoped that the report of the following case may help to arouse interest in disturbances in conduction which are associated with acute infections. Considerable attention has been given to the role of acute rheumatic fever and many articles have been written on diphtheria and a few on influenza. Other causes have been mentioned only occasionally in the literature.

It is rather amazing that in the forty-eight cases previously referred to, there was not a single case of auriculoventricular dissociation, due to acute rheumatic fever that had been studied by serial sections and reported in detail. There was however one case in which the condition was caused by diphtheria and another in which it was caused by tuberculosis. Gross and Fried⁹ studied the bundle of His in sixty cases of rheumatic heart disease, both acute and chronic. Although only one or two sections were examined in each case 60 per cent showed either exudative or vascular changes. When a marked bradycardia or an irregularity of the pulse occurs in an acute infectious disease an electrocardiogram is indicated, for it is only

5 Yater W. M., Cornell A. H. and Claytor Thomas. Auriculoventricular Block Due to Bilateral Bundle Branch Lesions. Review of Literature and Report of Three Cases with Detailed Histopathological Studies. Arch. Int. Med. 57: 132-175 (Jan.) 1936.
6 Frommel E. and Thevenod A. Blocage auriculoventriculaire complet et transtourne au cours d'une pneumonie. Arch. d. mal. du coeur 19: 535-536 (Aug.) 1926.

7 von Kiss Paul and Wollek Bela. Herzblock beim Kinde im Anschlus an eine Gruppe Pneumonie. Arch. f. Kinderh. 104: 38-41 1933.

8 Maham I. quoted by Yater, Cornell and Claytor.
9 Gross Louis and Fried R. M. Lesions in the Auriculoventricular Conduction System Occurring in Rheumatic Fever. Am. J. Path. 12: 31-44 (Jan.) 1936.

by this means that an arrhythmia may be proved beyond any doubt. When patients who have defective conduction come to necropsy a thorough investigation of the conduction system should be made by serial sections. A better understanding of the pathologic changes may enable physicians to advance further in the prevention and treatment of this serious complication. In the large majority of cases in which recovery from the primary infection occurs there is a disappearance of the heart block, nevertheless, the presence of complete auriculo-ventricular dissociation, especially when associated with the Stokes-Adams syndrome, may cause a fatal termination in an otherwise nonfatal case.

REPORT OF CASE

A girl, aged 15 years, registered at the clinic March 12, 1937, because of generalized abdominal pain which had been present for two days. March 6, 1937, two days after she had played basket-ball, she had noticed mild soreness across the abdomen, this had persisted one day. March 8 she had had a slight chill and had felt lightheaded. The following day she had left school because of dizziness. These symptoms had persisted and on the day before she came to the clinic she had suffered

other evidence that would cause one to suspect peritonitis or a specific nature, nor was there any history of appendicitis. The prominent signs in the right lower quadrant of the abdomen were the only indications that the appendix was the causative factor. Because of the extensive peritonitis and toxemia, it was decided that conservative measures offered a better prognosis than surgical intervention. The course of the illness was about stationary for four days after admission, the temperature varied between 101 and 103 F and the pulse ranged between 100 and 120 beats per minute. March 16, the fifth day of hospitalization, pain developed at the tip of the right scapula. Roentgenologic examination confirmed the clinical diagnosis of pneumonia, which involved the lower lobe of the right lung. In spite of this complication, the general condition improved slightly. March 18 the third day following the onset of pneumonia and the eighth day of hospitalization, the pulse rate dropped from 104 to 64 beats per minute and remained between 50 and 60 for the duration of the illness. The fall in pulse rate developed gradually over a period of twelve hours.

An electrocardiographic tracing, made two days after the onset of bradycardia, revealed a ventricular rate of 47 and an auricular rate of 40 beats per minute, with complete dissociation (fig 1). Another tracing made two days later did not show any significant change.

March 22, the patient was improving. The temperature had not been as high as 101 F for the past four days and the abdominal pain and tenderness had largely subsided. The pneumonia was resolving satisfactorily but the pulse rate remained about 50 beats per minute. Suddenly at 9:00 p. m. the patient became dyspneic and cyanotic and died within a few minutes.

Necropsy revealed a generalized peritonitis, about 2 liters of slightly purulent fluid was found in the peritoneal cavity. On the coils of intestine there was abundant evidence of fibrinopurulent exudate and the omentum had migrated to the right lower quadrant of the abdomen. The appendix was normal, while in the fallopian tubes there was a mild secondary salpingitis.

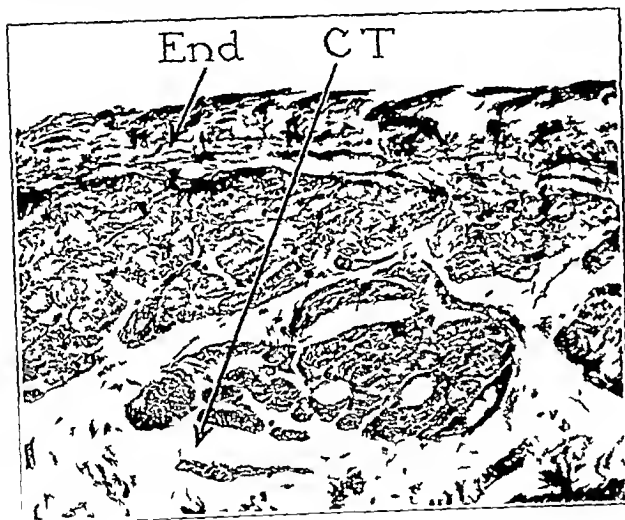
In the right pleural cavity there was about 200 cc of yellow turbid fluid, and a thick fibrinopurulent exudate was found between the lower lobe of the lung and the pleura. The lung was essentially normal except for evidence of a resolving pneumonia beneath the pleuritis. The left pleural cavity contained about 100 cc of the same type of yellow turbid fluid but the pleura and lung were normal.

The heart weighed 304 Gm and was reddish brown. The usual amount of epicardial fat was present. There was no evidence of fatty change, fibrosis or degeneration in the myocardium. The four chambers of the heart showed neither hypertrophy nor dilatation. The appendages, the endocardium and the valves were normal. The foramen ovale was anatomically open but functionally closed. There was practically no coronary sclerosis. Cardiac measurements were within normal limits.

The exudate covering the peritoneum consisted almost entirely of fibrin and pus cells. There was no evidence of organization. Many gram-positive diplococci were found. It was necessary to embalm the body before necropsy because only a small abdominal incision was authorized. Nevertheless an attempt was made to take cultures of the peritoneal fluid and exudate in those parts which showed the least evidence of embalmation. The cultures failed to reveal any pneumococci or other organisms.

The exudate covering the right lower lobe of the lung exhibited the typical picture of the exudate of an acute pleuritis with early organization. Many gram-positive diplococci were found. The lower lobe of the right lung showed advanced organization and there were many areas of adult connective tissue. These changes in the lung extended for about 3 cm beneath the pleural exudate. The remainder of the lung contained a few mononuclear cells within many of the alveoli but was otherwise normal. The remaining lobes of the lung were normal. Sections of other organs were practically normal.

Several sections of the myocardium taken at various levels in the septum and ventricles were studied and revealed no



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Her past history was unremarkable and her family history did not reveal anything of importance.

The patient was well developed, slightly obese and weighed 100 pounds (45.4 Kg.). The value for the systolic blood pressure was 90 mm. Hg. and for the diastolic pressure was 60 mm. Hg. Her pulse rate was 100 beats per minute. Her respiratory rate was 14 breaths per minute. There was a mild tenderness across the entire abdominal wall but no tenderness in the right lower quadrant. Her roentgen examination of the heart, lungs and thoracic systems was entirely negative.

And a few days before her death a specimen of blood was taken and revealed a specimen of passed blood. The blood was 9 per cent erythrocytes.

It was
peritonitis
story or

normal Sections that were cut after freezing contained no stainable lipoids. Three blocks of tissue were removed for serial sections. One block included the auriculoventricular node and the first portion of the bundle of His and also included about 1 cm of the membranous septum and about 3 cm of the interventricular septum (fig 2). This method required a longer time for fixing than is otherwise necessary and the sections were so large that only after the shrinkage due to fixation could two of them be mounted on a slide. It was necessary that the long axis of the sections be parallel with the long axis of the slide. This technic reduced the tremendous labor required for serial sections of the conduction system. The second block contained the terminal portion of the bundle of His and most of the right and left branches. It was not necessary to study the more distal branches in this case, because of the nature and extent of the lesion found. The third block included the upper part of the sulcus terminalis and contained the sino-auricular node. This block was sectioned parallel to the sino-auricular node while the other blocks were cut in a transverse direction to Tawara's node and the bundle of His. All blocks were fixed and were embedded in paraffin and sections were cut 10 microns thick. In blocks 1 and 2 sections 1 and 2 were mounted on slide 1 sections 31 and 32 were mounted on slide 2 and so on. These were stained with hematoxylin and eosin except for each fifth slide, which was stained with Van Gieson's stain. It should be emphasized however that in hearts suspected of undergoing fibrosis, every other slide or every slide should be stained with Van Gieson's stain or some other connective tissue stain. Each twentieth and twenty first section of block 3 was mounted and stained with hematoxylin and eosin, except for each third slide, which was stained with Van Gieson's stain.

The sino auricular node appeared normal. The usual central artery was seen but neither this artery nor the arterioles were thickened. No changes were observed in the interlacing muscle and connective tissue cells or in the nerves of the node.

The branch of the right coronary artery which passes from the posterior interventricular septum to supply the node appeared normal. Muscle fibers of the auricle connected with the node in the usual fashion.

The auricular muscle near the node showed a slight to moderate degree of granular degeneration with an apparent edema of the cytoplasm. The nuclei appeared normal. The auriculoventricular node was in its usual position on the right of the membranous septum. The size shape number of specialized muscle fibers and their whorl-like arrangements were all normal. The arteries and arterioles showed no abnormalities. The cells of the node however exhibited the same type of change which affected the nearby auricular muscle. The granular degeneration apparent edema and pale staining character of the cells was only slight in the node but became more pronounced as the conduction system was traced toward its termination. After the node merged into the bundle of His the bundle followed its typical course by passing through the membranous septum obliquely and then coming to lie above and to the left of that part of the interventricular septum which joins the membranous septum. In the latter position the left branch began coming off. The bundle revealed the changes already described but to a moderate degree as the left branch passed down beneath the endocardium on the left surface of the interventricular septum, the degeneration became

more marked. Instead of the normal deep red color, the cells were pale pink and were distended by what appeared to be fluid in the cytoplasm (fig 3). Granules within the cytoplasm were marked and no striations could be found. No exudative changes were seen. In the left branch these changes were found in all sections. In addition the myocardium, beneath the bundle of His, exhibited these abnormalities in a small portion which was 2 mm long and which extended about 1 mm beneath the bundle.

The right branch followed its normal anatomic course but it showed even more degeneration than the left branch (fig 4). It was also similar to the left branch in that the lesion was more prominent in the terminal portion. Brown's-Gram stains revealed no bacteria in any portion of the conduction system.

COMMENT

The moderate degree of acute degeneration found in the auriculoventricular node and in the anterior portion of the bundle of His may or may not have produced the complete auriculoventricular dissociation. However, the changes found in the right and left branches were so marked that if the auricular impulses

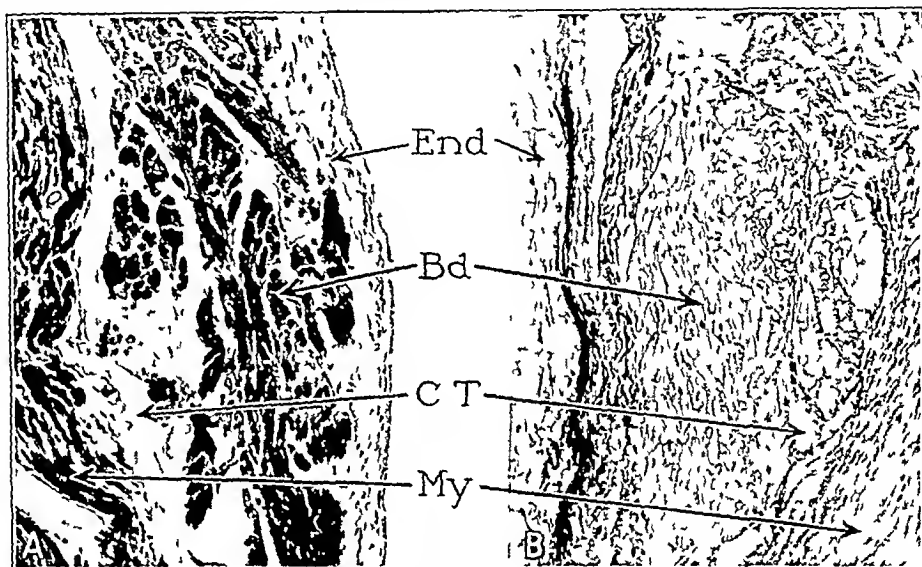


Fig 4—A normal right branch of bundle of His one may note the normal staining reaction and cellular structure the bundle (Bd) lies beneath the endocardium (End) and is separated from the myocardium (My) by connective tissue (CT). B the degenerated right branch with its pale staining reaction the clear cells are apparently edematous specimens stained with hematoxylin and eosin slightly reduced from a photomicrograph with a magnification of 150 diameters.

had been able to reach as far as these branches, they almost surely could have traveled no farther. The finding of similar areas of degeneration in the auricles and ventricle suggest that the conduction system was involved by an extension of this lesion.

Had the peritonitis and empyema subsided the heart block would, in all likelihood, have disappeared. This is borne out by previous cases of pneumonia and other acute infections. The cellular structure of the conduction system, although degenerated, showed no actual necrosis and probably would have returned to normal.

Signs of peritonitis appeared five days before any evidence of empyema or pneumonia was manifest. However, there was no organization of the peritoneal exudate, whereas that of the pleura was undergoing early organization and the underlying portion of the lung contained young as well as adult connective tissue. It should be recalled that the patient had a chill three days before the onset of abdominal pain.

These observations indicate that the empyema and pneumonia probably preceded the peritonitis but did not become clinically manifest until later.

The gram-positive diplococci found both in the peritonitis and in the pleuritis were probably pneumococci, although this cannot be proved.

There is no clear explanation for the auricular rate of 40. The sino-auricular node was histologically normal. The theory of toxic suppression might be advanced. However, in other cases in which complete heart block is associated with acute infections, the auricular rates are usually normal or rapid.

SUMMARY

In this case a complete heart block developed during the course of peritonitis, pleuritis and pneumonia. The patient died suddenly while recovering from the infection. Necropsy revealed a marked acute peritonitis, acute pleuritis of the right lower lobe and a minimal amount of residual pneumonia. The lesions of the lung and pleura were definitely older than those of the peritoneum. A gram-positive diplococcus was identified in the pleural and peritoneal exudates but cultures were negative. In serial sections of the conduction system there were slight changes in the auriculoventricular node which became more pronounced as the conduction system was followed toward its terminal portions. These changes were in the form of apparent edema and swelling of the cytoplasm and there also was granular degeneration. There was loss of the striations and the cells which were stained paler than normal. The right and left branches of the bundle of His were affected to a marked degree and in some areas the auricular and ventricular muscle exhibited the same type of degeneration.

FURTHER STUDIES WITH THE TUBERCULIN OINTMENT PATCH TEST

ERAST WOLFF, MD

SAMUEL HURWITZ, MD

In previous studies a preliminary test was made to the value of the tuberculin patch test in the diagnosis of tuberculosis. It was found that the use of application of the tuberculin patch test in the high percentage of agreement with the Mantoux test (0.1 mg. of old tuberculin) made this method a most desirable one for general practice. These previous reports deal with a total of some 800 observations. In the present paper we enlarge on our previous results and report our experience with approximately 1,000 new patients.

HISTORICAL REVIEW

In 1907 Moro first described inunction method for the diagnosis of tuberculosis. His ointment consisted of 50 per cent old tuberculin in a base of hydrous wool fat. This, however, proved too insensitive for general use. Nevertheless it stimulated many attempts to improve on the percutaneous method. Hamburger introduced the so-called perkutan ointment which consisted of old tuberculin evaporated to a constant weight

Then followed Moro's diagnostic tuberculin ointment which was made from evaporated tuberculin of old cultures, both human and bovine, in a base of hydrous wool fat. Shortly thereafter Lowenstein prepared "dermotubum" from glycerin broth cultures of human tubercle bacilli evaporated to one twenty fifth volume, filtered and mixed with dead human bacilli equivalent to one-fourth its weight.

Moro developed a concentrated tuberculin ointment containing dead tubercle bacilli and keratolytic substances, which is known as *ektubin*. All the previously mentioned preparations were applied with friction and no adequate control ointment was used. However, Malmberg and Fromm in 1931 devised a tuberculin plaster containing 1 drop of tuberculin per square centimeter and used a control ointment for the first time.

In reviewing the literature on the percutaneous method of tuberculin testing, one is impressed by the fact that comparison in most instances has been made with the Pirquet reaction. The latter method is generally agreed to be definitely inferior to the Mantoux test and has been replaced by it in America at least. Thus to evaluate adequately any new preparation it should be compared to the most sensitive method at present available for the detection of tuberculous infection, which is the Mantoux test. This we propose to do in the ensuing discussion.

PREPARATION OF THE TUBERCULIN OINTMENT

The ointment employed in this and previous studies was prepared in the following manner. Regular tuberculin glycerin broth was inoculated with human culture H-37. The cultures were incubated for four weeks and then sterilized in the Arnold sterilizer. After sterilization the material was evaporated to one fifteenth of the original volume the organisms being left in the material. The evaporated and concentrated material was then triturated to a smooth mixture to which 0.4 per cent phenol was added as preservative. After trituration the material was filled into appropriate tubes. The control material was prepared in exactly the same manner with the exception that the flasks of glycerin broth were not planted with any organisms. The incubation and evaporation were carried out simultaneously with the cultured material.

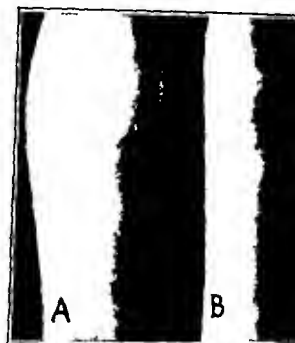


Fig. 1—Slight positive reaction (A) ointment patch test and (B) Mantoux test 1:1000.

From the Pediatric Hospital, California Medical School, and the Children's Hospital, Los Angeles, California.
Tuberc. 27, 1931, 100.
J. Dis. Child. 4, 1931, 100.
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4. Moro E. Ueber ein diagnostisches Tuberkulin. *Munch. med. Wchnchr.* 67, 1253 (Oct. 29) 1920.
5. Lowenstein F. Die Anwendung des Tuberkulins beim Menschen. *Handbuch der pathogenen Mikroorganismen*, 2, 943, 1921.
6. Melton F. Der diagnostische Wert der Applikation von Tuberkulin. *Salbe Wien klin. Wchnchr.* 37, 313 (March 2) 1914.
7. Malmberg N. and Fromm B. Die Tuberkulininjektion. *Acta paediat.* 10, 433, 1931.
8. Reiher O. The Mantoux Reaction in Children. *Acta paediat.* 35, 714 (Dec.) 1916.
9. Fli Lilly & Co. prepared the ointment and made it available for clinical trial.

TECHNIC OF THE TEST

The area usually selected for application of the ointment is the inner surface of the upper arm or the paravertebral region between the eighth and the eleventh thoracic vertebra. The skin is cleansed with benzine or ether and dried. A pea-sized drop of the tuberculin ointment is applied on the right side and a similar sized drop of the control material is placed on the left side. Each of these drops is covered tightly with a 1½ inch square of ordinary adhesive plaster, which is removed in forty-eight hours.

Correlation Between Ointment and Mantoux* Tests in Different Clinical Groups

Classification	Number of Cases	Agreement per Cent	Disagreement per Cent
Negative Mantoux and x ray	573	99.3	0.7
Positive Mantoux, negative x ray	146	93.8	6.2
Positive Mantoux, positive x ray (clinically latent)	210	97.7	2.3
Positive Mantoux, positive x ray (clinically active)	141	100.0	0.0
Total	1060	98.2	1.8

* The Mantoux test was done with 0.1 mg. of old tuberculin. Agreement between the ointment and the Mantoux reaction occurred in 100 out of 100 instances or 98.2 per cent. Discrepancies occurred in nineteen cases or 1.8 per cent.

1. Positive Mantoux, 0.1 mg. negative ointment. This disagreement occurred fourteen times or in 1.3 per cent of total tests. In none of these was there x ray or clinical evidence of activity.

2. Negative Mantoux, 0.1 mg. positive ointment. This disagreement occurred five times or in 0.5 per cent of total tests.

One of the latter patients showed hilar calcification. In four cases the ointment and the intracutaneous test with 1 mg. of old tuberculin were positive whereas the injection of 0.1 mg. of old tuberculin had failed to produce a positive reaction. In one of these cases roentgen examination showed a hilar gland tumor.

Positive reactions are manifested as follows. A weak test shows a few discrete small papules of a pale rose color (fig. 1), a medium reaction consists of many vividly red papules with erythema of the surrounding skin (fig. 2), while a marked positive reaction shows in addition to the preceding condition marked induration and yellowish discoloration of the total test area



Fig. 2—Medium positive reaction. (A) negative control test and (B) ointment patch test.

(fig. 3). Occasionally distinct vesicle formation results. A few papules may rarely be seen under the control type, but only in strongly positive reactors, and no difficulty in interpretation has been experienced.

The color of the positive reaction area begins to fade in about ninety-six hours but may still be discernible after one week. Scaling and brownish pigmentation of the skin may be seen for several weeks after the marked reaction. In contradistinction to the intra-

cutaneous test there has never been a generalized systemic reaction. The only symptom encountered is itching over the positive test area.

CLINICAL MATERIAL AND RESULTS

This paper is based on a study of 1,075 tests done on 964 patients ranging in age from 3 months to 15

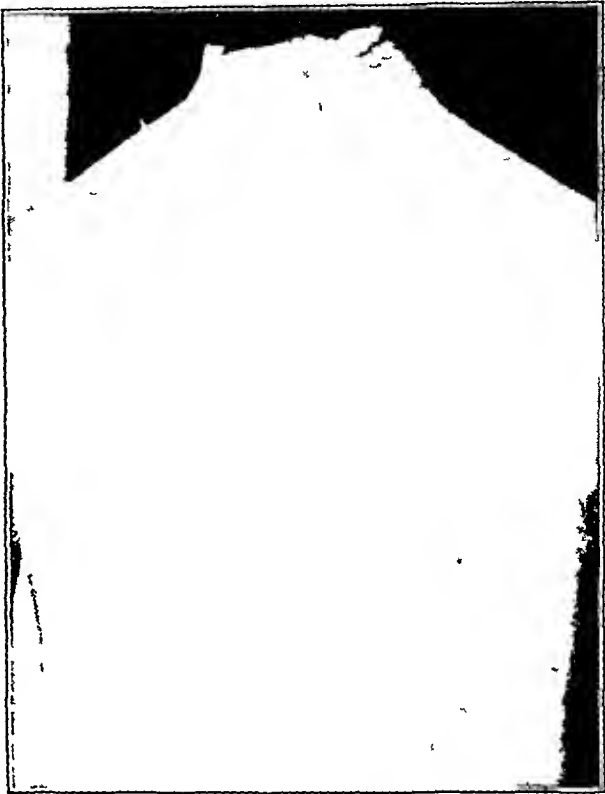


Fig. 3—Strong positive reaction. (A) negative control test and (B) ointment patch test.

years. These patients were seen at the children's chest clinic of the University of California Hospital, the outpatient pediatric department of Mount Zion Hospital, and the children's tuberculosis wards of the San Francisco County Hospital. These patients were tested simultaneously with the tuberculin ointment and with 0.1 mg. of old tuberculin by the Mantoux method. The accompanying table shows the correlation between the two methods of testing in the different clinical groups.

The high percentage of agreement between the Mantoux and the tuberculin ointment patch test shows the general sensitivity of the latter method. A striking feature is that in no case of a discrepancy in which the ointment method was negative has there been any clinical or roentgenologic evidence of active tuberculous disease. On the other hand, the ointment test has been positive in every instance of active tuberculosis.

COMMENT

Our results with the ointment described have been better than with any other percutaneous application yet employed. Kundratitz¹⁰ in 270 Mantoux (0.1 mg.) positive hospitalized tuberculous children tested with dermatubulin found discrepancies in favor of the intradermal method in twenty-three cases, or 8.6 per cent. Somewhat better results were reported by Goldberg

10. Kundratitz K. Die perkutane Tuberkulinprobe mittels der Tuberkulin salbe Dermatubulin. Ztschr. f. Tuberk. 42: 222, 1925.

and Gasul,¹¹ who among 109 children observed only two instances in which the Mantoux reaction proved positive while the dermatuberculin test was negative. Hille¹² among ninety-six cases positive to 0.1 mg. of old tuberculin intracutaneously observed only eighty-five positive reactors with Moro's diagnostic tuberculin ointment. Although Malmberg and Fromm¹³ reported a large series of cases controlled by the Pirquet test, only fifty Mantoux positive reactors were recorded and of these forty-nine proved positive to their tuberculin plaster. Verde,¹⁴ comparing the tuberculin plaster test with the Mantoux reaction (1:5,000), found disagreement in seven cases out of 165 children examined in a routine manner; these discrepancies all favored the

overcomes the objection of psychologic shock and pain caused by the use of the hypodermic needle. No positive reactions are encountered as a control test is an integral part of the method and the skin reaction is protected as a routine by the adhesive plaster. The ointment is comparatively easy to prepare, is relatively inexpensive and has been found to retain its potency to a period of at least four years.

SUMMARY

1 The agreement between the ointment patch test and the intracutaneous test with 0.1 mg. of old tuberculin in 1,075 observations was 98.2 per cent. This corresponds closely to figures previously reported to some 800 observations. Discrepancies occurred only in clinically latent cases.

2 The ointment test was positive in every case of active tuberculous disease.

CONCLUSION

The results of a tuberculin patch test with control herein and heretofore detailed warrant the conclusion that in our experience the test may safely be substituted for the Mantoux test with 0.1 mg. of old tuberculin in office and public health practice. We feel that it now merits a thorough clinical trial.

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MYASTHENIA GRAVIS

REPORT OF A CASE WITH NECROPSY

FRANK E. BARTON, M.D.

AND

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We here report the clinical course of an extremely severe case of myasthenia gravis, the effect of treatment on the disease and the postmortem results. The etiology is unknown and although there is some agreement as to the primary microscopic changes in the muscle, each author finds multiple variations in the abnormality of the other organs and each seeks a new theory to explain the disease. Our report is unique in that we shall simply state the facts as we observed them and leave the speculation to others.

REPORT OF CASE

History.—A graduate nurse, aged 27, single, referred to one of us (F. E. B.) with a provisional diagnosis of hyperthyroidism, complained chiefly of loss of weight, nervousness and vocal changes, which began approximately six months prior to admission to the hospital. Increasing fatigue was especially apparent when she walked any considerable distance. It was difficult to swallow or talk, and the face felt stiff. Before the onset of her illness she weighed 180 pounds (82 kg.). She voluntarily reduced her weight without medication to 140 pounds (67 kg.). This was maintained until the present illness. During the six months prior to admission she lost 38 pounds (17 kg.) and became extremely nervous and irritable and had an aversion to food. Ten weeks prior to admission she was confined to bed because of the weakness. The speech became thick and very difficult to understand. Food was regurgitated through the nose and the length of time it took to masticate a meal was progressively increased. She perspired profusely and was intolerant to heat. Such slight exertion as was in bed caused palpitation.

The past history was unimportant except that the patient had followed an illness of several weeks which she described as the grip. While training as a nurse she contracted

From the Massachusetts Memorial Hospital and the First



intra-dermal method. In 1935 Anzen¹⁵ reported on a group of 2,183 patients between the ages of 3 days and 15 years and found an agreement between the tuberculin plaster and the Pirquet test in 98 per cent of cases. Among 1,838 patients in whom a negative plaster reaction was found, 806 were further tested by the Mantoux method and 125 per cent reacted positively. Among fifty cases found to react positively to our ointment patch test, the Mantoux method showed two negative results with the plaster described by Anzen. Further present support of the work with

the ointment patch test. The use of the underlying factor in being attached. It is also quite expensive for wide spread use. Only in this study effort were made to incorporate purified protein derivative powder into an ointment but the results proved very unsatisfactory. As the work progressed with the ointment, it was found because the tuberculin ointment was found to be of a period of four years' duration.

RESULTS OF THE TEST

The ointment patch test which is clinically equivalent to the Mantoux test, its advantages are evident. The ease of application and the fact that it is a general work.

It is a comparison of the results of the two methods.

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hoarseness and had had periods of fatigability, but as the symptoms were not severe she did not mention them. She had an occasional nonproductive cough. The bowels functioned with difficulty. Menstruation began at the age of 13 years and was always regular and painless.

Physical Examination—The patient was well developed but emaciated and was dyspneic when talking. The voice was hoarse and nasal. The face was flushed and the skin moist. There was marked ptosis of the eyelids, the pupils were dilated and reacted to light and in accommodation. The tongue was slightly coated and dry. The teeth were in good condition. There was decreased excursion of the palate. The face had a masked expression and it was impossible for the patient to whistle. There was no enlargement of the heart, the rhythm was regular and the rate was 112. The lungs were resonant with no abnormal breath sounds. The abdomen showed no masses, spasm or tenderness. There was no edema of the ankles. The fingers showed a fine tremor. It was difficult for her to elevate her legs from the bed and after three attempts it was impossible to do so at all.

X-ray examination of the skull was negative. The chest showed no evidence of substernal thyroid. The heart was small and concave, the left border exhibiting under the fluoroscope the rate of 120 per minute. Examination of the lungs gave negative results. X-ray films of the pharynx and larynx taken with the patient at rest showed deformity of the ventricles with a flattening of the inferior border and concavo-convex superior border. The appearance was practically unchanged during phonation (letter E). Fluoroscopically there were normal deglutitory movements. The oropharynx was not completely obliterated. There was marked limitation of the upward movement of the hyoid bone and larynx. The epiglottis showed incomplete excursion and barium was retained in the epiglottic vallecula and pyriform sinuses. There was no apparent evidence of tumor or inflammatory processes.

A special examination of the eyes revealed pupils 5 mm and reaction normal. Extra-ocular actions were normal. The media were clear. The fundi were normal. The fields were normal by confirmation. Vision was unsteady because of the patient's reduced physical condition. Examination of the larynx revealed no neoplasm. Excursion was definitely less than normal.

Laboratory examinations revealed Basal metabolic rate plus 29 and plus 19. Blood pressure 98 systolic and 54 diastolic. The tuberculin and Schick tests gave negative results. Blood cholesterol was 204 mg. Leukocytes numbered 11,050, neutrophils 76 per cent, lymphocytes 10 per cent, endothelials 11 per cent, eosinophils 3 per cent, hemoglobin 80 per cent and erythrocytes 4,600,000. The blood count did not change materially throughout the hospitalization. Chemical examination of the blood revealed nonprotein nitrogen 35, 40 and 36; blood sugar 100, 95 and 80. Sputum was negative. A complete urinalysis, characteristic of many, showed an alkaline reaction, specific gravity 1.025, total solids 5.8, urea 3.06, albumin slightest possible trace, no sugar, acetone or bile, a rare pus cell, no blood disks, few large epithelials, some phosphatic crystals, no casts. Creatinine nitrogen and creatine nitrogen readings are given in the accompanying table.

Clinical Progress—The patient was admitted to the hospital in a state of shock due to a long automobile ride. Following intravenous injection of saline solution and complete rest she showed slight improvement. Specific medication was not instituted until the ninth day. At this time ephedrine sulfate was given according to the dosage suggested by Boothby.¹ 5 grains (0.5 Gm) dissolved in 8 ounces (240 cc) of saline solution. One drachm (4 cc) of this solution was given from three to five times daily, the doses being distributed before and after meals. One drachm of this solution equals approximately one eighth grain of ephedrine. There was a notable improvement for a time but after a ten day trial it was necessary to suspend this medication because of an increase in the pulse rate, an increase in nervousness and marked incontinence.

Patients with hyperthyroidism often do not tolerate ephedrine well. There is an aggravation of all symptoms, with a good deal of apprehension. It is possible that a patient with myasthenia gravis with an increased metabolic rate will react to the drug in the same manner. During her stay at the hospital one other attempt was made to give ephedrine in a very much smaller dosage, but this brought about the same results. Therefore this type of treatment was discontinued. The fact that ephedrine is not helpful in all cases and appears to be even harmful in some has been reported by Irwin² and Boothby.³

Good nursing, careful feeding and intravenous injection of saline solution led to definite improvement. After two days in which no medication was given other than the regimen just mentioned, aminoacetic acid (glycine or glycocoll) was given as a therapeutic test. The aminoacetic acid was administered as a food, and its effect was supplemented by the use of gelatin. It was given in a daily amount of 30 Gm, divided into six doses. Prior to the use of aminoacetic acid the patient was disturbed by a great deal of thick, tenacious mucus. This symptom abated almost immediately. Mastication and deglutition showed a decided improvement. The patient became interested in her surroundings and enjoyed visitors, and her pulse rate attained a lower level. There was a decided increase of timbre of the voice and the muscles of the lower extremity responded longer to stimuli. There was no vomiting. Because

Creatinine Nitrogen and Creatine Nitrogen Readings

Date	Creatinine Nitrogen	Creatine Nitrogen	Date	Creatinine Nitrogen	Creatine Nitrogen
5/ 5/33	0.88	1.29	5/31/33	0.402	0.48
5/21/33	1.303	1.194	6/ 1/33	0.392	0.306
5/22/33	0.943	0.090	6/ 2/33	0.409	0.401
5/23/33	0.803	0.790	6/ 3/33	0.476	0.369
5/26/33	0.468	0.353	6/ 4/33	0.381	0.338
5/27/33	0.370	0.711	6/ 5/33	0.522	0.406
5/28/33	0.579	0.393	6/ 6/33	0.397	0.426
5/29/33	0.400	0.496	6/ 7/33	0.346	0.404
5/30/33	0.417	0.377	6/ 9/33	0.368	0.305

of the low blood sugar, varying from 100 mg to 80 mg, several intravenous injections of 10 per cent dextrose were given. The injections caused an aggravation of symptoms and a greater degree of fatigue. This observation has been reported by Boothby.³

In the seventh week of her hospital stay the patient was considerably improved. She had passed through two distinct periods of remission and aggravation. She experienced considerable relief from the profuse perspiration that had been so noticeable when she was first admitted to the hospital.

At this time dimethyl-carbamate ester of m-oxypheyl-trimethyl-ammonium-methylsulfate (prostigmin) was administered in the doses suggested by Pritchard⁴ and Laurent.⁵ The first dose was 5 cc subcutaneously with $\frac{1}{100}$ grain (0.00065 Gm) of atropine. This caused considerable muscular twitching, increased intestinal peristalsis and a decided sensation of weakness. The dose was reduced to 2 cc with $\frac{1}{200}$ grain (0.0003 Gm) of atropine three times in twenty-four hours. There was a marked improvement following the use of the drug, this improvement lasting approximately five hours following each injection. Laurent and Walther⁶ believe that the action of eserine and of its analogue prostigmin in the relief of myasthenic symptoms has not yet received a wholly adequate explanation. The suggestion that eserine acts by delaying the destruction of acetylcholine by choline esterase at the motor nerve ending seems the only workable hypothesis at present.

¹ Boothby, W. M. Myasthenia Gravis. Effect of Treatment with Glycine and Ephedrine. Proc. Staff Meet. Mayo Clin. 9: 293 (Oct. 3) 1934.

² Irwin, P. S. Myasthenia Gravis with the Report of a Case. Canad. M. A. J. 32: 403 (April) 1935.

³ Boothby, W. M. Myasthenia Gravis. Arch. Int. Med. 53: 39 (Jan.) 1934.

⁴ Pritchard, E. A. Prostigmin in the Treatment of Myasthenia Gravis. Lancet. 1: 432 (Feb. 23) 1935.

⁵ Laurent, L. P. F. Clinical Observations on the Use of Prostigmin in the Treatment of Myasthenia Gravis. Brit. M. J. 1: 463 (March 9) 1935.

⁶ Laurent, L. P. F. and Walther, W. W. The Influence of Large Doses of Potassium Chloride on Myasthenia Gravis. Lancet. 1: 1434 (June 2.) 1935.

Any substance known to facilitate the production or the utilization of acetylcholine might therefore be expected to exercise a favorable influence on myasthenia."

The patient had improved at this stage to the extent that she sat in a chair for fifteen minutes and had taken three steps at a time. When she was admitted to the hospital she was unable to take consommés, water or fruit juices without great difficulty and considerable choking. At this time she was eating solid food (potato, meat, fruits), was sleeping well and could carry on short conversations with a fairly strong voice. Her temperature was normal and her pulse rate was in the nineties. She was very bright and alert and seemed quite happy. This improvement continued until the end of the ninth week.

Suddenly her pulse became accelerated and of poor quality, there was evidence of cyanosis. She was immediately placed in an oxygen tent. Her respirations became more and more



Fig. 1—Section of the heart showing edema of interstitial tissue, separation of muscle bundles and accumulations of lymphocytes (X 120).

labored, and the cyanosis increased. A tracheotomy was performed and she was returned to the oxygen tent. Prostigmin was given with temporary benefit but the respirations became more shallow and finally she died of respiratory failure.

COMMENT

The similarity between many of the symptoms of hyperthyroidism and myasthenia gravis, particularly with respect to the syndrome of muscular fatigue, has been discussed by Allen⁹ and by Cohen and King.⁸

One of us (F. C. B.) had three similar cases referred with a diagnosis of hyperthyroidism only to have the laboratory and clinical evidence point toward myasthenia gravis. These cases have contributed to the usual treatment of this disease.

The basal metabolism in this particular case remained elevated until death, but the thyroid gland failed to show any microscopic changes. Myasthenia gravis should be considered in the differential diagnosis of hyperthyroidism.

Since the changes found at necropsy in myasthenia gravis were first described by Wills⁹ in 1877, numerous authors have published the postmortem examinations in one or more cases, the most comprehensive reports being those of Starr,¹⁰ Bell¹¹ and Norris.¹² The excellent review of Keschner and Strouse¹³ suggests many possibilities.

For some time the disease was thought to be due to changes in the central nervous system. Attention was then shifted to the myoneural junction and a fatigue syndrome. Some have associated it with dermatitis, others with hyperthyroidism. One author made the novel suggestion that the disease was a "perivascularitis chronica proliferans." The seemingly more than accidental association with thymic tumors is discussed by Bell and Norris, is disconcerted by those cases in which the thymus is normal or atrophic. The disease has been thought to be due to a toxemia by the majority of writers, though just what the source or type of toxin is has not always been clear. A bacterial theory has been expressed but was never substantiated until Butti¹⁴ found streptococoid organisms in the tissue from seven cases. Rosenow and Heilman¹⁵ have produced myasthenia-like lesions in animals by injecting toxin from specific strains of streptococci.

Our case resembles many others reported but presents interestingly divergent features. The myocardium showed as marked a myasthenic reaction or "lymphorhagia" as any of the striated muscle throughout the body. We also noted in all the muscles examined that there were not only evidences of atrophy and Zenker's degeneration of individual bundles but also a distinct inflammatory spectrum. To be sure, this consisted for the most part of the more chronic inflammatory phases with lymphocytic infiltration and fibrosis as well as the characteristic lymphoid accumulation universally described by others, but other features were also present in which the edema and neutrophilic infiltration of acute inflammation predominated, albeit the usual capillary engorgement was not pronounced. A consistent lack of any perivascular or specific vascular lesions was noted except in the pancreas. Here one encountered a patchy acute inflammation of the interstitial tissue with relatively little involvement of the parenchyma. The distinct phlebitis and lymphangitis present at one point would be entirely absent in another group of vessels no more than 2 mm distant.

A severe toxemia was clearly evidenced by the splenitis, the focal necrosis in the liver, adrenals and pancreas, and the mild enteritis. That this was of a peculiar and probably nonbacterial nature is perhaps supported by the fact that the lungs showed very few microscopic changes. Special stains on all the more mentioned tissues and the muscles showed rare gram

- 9 Wills, Samuel. Guy's Hosp. Rep. 22: 54, 1877.
- 10 Starr, M. A. Myasthenia Gravis. J. Nerv. & Ment. Dis. 39: 721, 1912.
- 11 Bell, E. T. Tumors of the Thymus in Myasthenia Gravis. J. Nerv. & Ment. Dis. 45: 130 (Feb.) 1917.
- 12 Norris, E. H. Thymoma and Thymic Hyperplasia in Myasthenia Gravis with Observations on the General Pathology. Am. J. Pathol. 42: 1 (July) 1936.
- 13 Keschner, Moses, and Strouse, Israel. Myasthenia Gravis. Neurol. & Psychiat. 17: 337 (March) 1927.
- 14 Butti, H. R. Myasthenia Gravis. Arch. Pathol. 21: (June) 1917.
- 15 Rosenow, E. C. and Heilman, F. I. Bacteriologic Studies in Myasthenia Gravis. Proc. Soc. Exper. Biol. & Med. 31: 414 (1936).

positive cocci, certainly having no anatomic relationship to the lesions noted and we seriously doubt that there was any causal relation between the two.

All ductless glands were negative except for the thymus, which was extremely atrophic.

POSTMORTEM EXAMINATION

Unless specifically mentioned, the gross and microscopic appearances of various organs and structures were normal. The necropsy was performed four hours after death. The skin over the entire body was soft, smooth, slightly moist and waxy in appearance. There was a slight conjunctival hemorrhage near the inner canthus of the left eye. No palpable glands were present. The body was not excessively emaciated; the panniculus adiposus was 2 cm deep and the abdominal and mesenteric fat was well preserved. The musculature throughout, including the diaphragm, was markedly thinned; the tissues appearing soft, flabby, friable and a very pale pink.

Heart—This weighed 250 Gm and was not particularly remarkable on gross appearance. There was little subepicardial fat. The myocardium was firm, nonfriable and a pale pinkish brown. The endocardium, valves and coronaries were normal. Microscopically, the myocardium, particularly its outer half, showed marked changes. The muscle bundles showed little evidence of individual degeneration, the cross striations being well defined against a normal staining reaction. There was no cytoplasmic necrosis or vacuolation. The interstitial tissue was markedly edematous and widely separated the muscle bundles. It was infiltrated with large numbers of lymphocytes, occasional endothelials and rare neutrophils. Many areas of 'lymphorrhagia' were present.

Lungs—The right lung weighed 250 Gm, the left 220 Gm. They were not remarkable except for the bronchi, which were slightly reddened and covered with a thick, yellow, tenacious mucopurulent exudate. Microscopically they showed an acute bronchitis and early bronchopneumonia. Interestingly enough, however, there were also a few scattered areas of loosely arranged fibrous thickening of the interalveolar walls, in which were accumulations of lymphocytes. These were more numerous than the customary lymphoid accumulations encountered in the lung and had no resemblance to healed tuberculous foci.

Spleen—The spleen weighed 270 Gm and was firm, smooth, regular and a dark purplish gray. On section the germinal centers were very prominent, standing out sharply as large gray dots 2 mm in diameter against a depressed, moist, dark crimson background which yielded no pulp on scraping. Microscopically the germinal centers were almost completely replaced by masses of infiltrating phagocytic monocytes while the surrounding pulp was heavily infiltrated with neutrophils.

Liver—This weighed 1,470 Gm and was essentially normal.

Gastrointestinal Tract—The stomach showed a total absence of rugae. There was no thickening of the wall; the mucosa was intact. Microscopically there was slight chronic gastritis. The small intestine showed a few scattered patches of mucosal reddening with no evidence of ulceration, induration or serosal involvement. Microscopically it showed an early acute focal enteritis.

Pancreas—This weighed 100 Gm and was distinctly swollen, soft and boggy. Peripancreatic tissue was edematous. Longitudinal section of the pancreas showed no evidence of fat necrosis or hemorrhagic pancreatitis. Milking the tissue brought small heads of yellow, purulent-appearing material to the orifices of the ducts. Microscopically the interstitial tissue showed multiple foci of acute inflammation in which no bacteria could be found. The other interstitial tissue was edematous but showed no general inflammatory infiltration, although minute foci of fat necrosis were present. The acinar and isular tissue showed no inherent abnormality.

Kidneys—The right kidney weighed 120 Gm, the left 130 Gm. They were essentially normal.

Adrenals—Together these weighed 20 Gm. They were normal in gross appearance. Microscopically they showed small areas of focal necrosis in the cortex, being invaded by neutrophils.

Ovaries—These were essentially normal except for a few small follicular cysts of each ovary.

Aorta—This presented very early atheromatous patches throughout.

Organs of the Neck—The thymus weighed 5 Gm. It was extremely atrophic and on section presented a tough, yellow, fibrofatty appearing surface. Microscopically only the faintest scattered remnants of the original tissue remained, including rare lymphoid follicles and corpuscles.

Thyroid—The thyroid weighed approximately 20 Gm and was essentially normal. The parathyroids were essentially normal.

Striated Muscle—Throughout the entire body the striated muscle was soft, flabby, friable and almost colorless, being a very pale pink. Microscopically sections through numerous muscles, including the diaphragm, all showed the characteristic picture theoretically associated with myasthenia gravis. The muscle bundles showed a marked variability in their size, shape and staining reaction. Some fibers were swollen to three times



Fig 2—Section of the thymus under low power showing marked atrophy, slightly reduced from a photomicrograph with a magnification of 25 diameters.

the dimension of others immediately adjacent to them. When so distorted they presented the typical picture of Zenker's degeneration. In the majority of fibers the cross striations were well defined but there was considerable tortuosity and irregularity of individual fibers. All fibers were widely separated by an edematous interstitial tissue heavily infiltrated with large numbers of acute and chronic inflammatory cells. Typical lymphoid accumulations or 'lymphorrhagias' were present as well as extensive general infiltration with lymphocytes and monocytes. Numerous foci of neutrophilic infiltration were present in and about which were lacking any marked capillary engorgement or deposits of fibrin (fig 3). Only the rarest gram-positive coccoid organisms could be found and these seemingly had no relationship to any specific lesion, which gave the distinct impression of being artefactual.

CONCLUSIONS

From an exhaustive study of material at hand it must be concluded that one is dealing here with a case corresponding in general to the pathologic and clinical picture of myasthenia gravis. The reported accounts of the pathogenesis and characteristic changes of the

disease are so variable that one cannot be entirely sure of how accurately one's own observations correspond to the major concepts set forth by others. In this particular case there are no demonstrable pathologic changes of the central nervous system. The thymus is extremely atrophic instead of presenting hyperplasia or tumors as described by many authors. With special stains we have been able to demonstrate coccoid bodies in some of the more severe lesions (pancreas striated muscle), but we cannot demonstrate any immediate causal relationship between them and the pathologic changes observed, and they are not present in sufficient number, so that an artefactual basis might not easily account for them. We have noted, as have one or two authors, that there seems at least in places to be some perivascular involvement, although in our case



Fig. 1. Thymus and degenerating muscle with lymphocytes and neutrophils.

this tended to be a phlebitis rather than an arteritis. The most striking well formed myositis affecting the muscle of the body has been present throughout the course of the heart muscle of locomotion and the trunk of being markedly involved. The slight degree of acute bronchitis is almost certainly an infiltrative terminal phenomenon. This is supported by the presence of large colonies of organisms within the bronchial wall, while the immediately adjacent alveolar tissue shows a very reaction. The scattered lymphoid cells seem to be a lymphoid reaction to pancreatitis and adrenal all have little use.

PROBLEMS PRESENTED BY LESIONS OF THE RIGHT QUADRANT

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The diagnosis and treatment of lesions of the right lower quadrant do not as a rule present difficult clinical problems. But every so often patients with a difficult condition in this region are encountered who not only have run the gamut of diagnostic procedures for years but also have undergone surgical intervention only to have a questionably diseased appendix removed.

In view of the fact that appendicitis is such a comparatively common disease, it is not surprising that the symptoms referable to the right lower quadrant are often ascribed to an inflammatory process of the appendix when in reality the lesion is in the cecum or the terminal part of the ileum. For example it is a well known clinical observation that not infrequently patients with nonspecific granuloma or regional ileitis have an appendectomy performed and subsequently, when the symptoms recur, a pathologic process in the ileum is discovered. Patients with symptoms due to cecal stasis, spasm of the cecum or other lesions in the region are often subjected to the removal of the appendix only to have a recurrence of the clinical syndrome, perhaps in a more persistent form. The cecum may be the site of a benign or malignant tumor or an inflammatory or edematous process, infection, parasitic or allergic in origin, which may give rise to a rather confusing clinical picture.

It is a fact that the usual physical and laboratory examinations do not always reveal the correct diagnosis. Special methods of investigation may be necessary, particularly a study of the small intestine. The diagnostic procedure has not been sufficiently utilized although several observers¹ have stressed its clinical application. We have used it, with modifications, to diagnose lesions of the terminal part of the ileum and the cecum which were not detected by routine gastro-intestinal examinations. In preparing the mixture for this investigation four heaping tablespoonfuls of barium sulfate are emulsified in a quantity of cold water sufficient to fill a 10 ounce glass. Five or 6 ounces of this mixture is given for the oral method while for the duodenal instillation 3 ounces is administered. Films are taken every one or two hours.

In the diagnosis of lesions of the right lower quadrant one must remember that the anatomic relationship of the viscera is such that the symptoms referable to this

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1. These include:
 - Mills R. W. Am J Roentgenol 9: 199-205 (April) 1937.
 - Forssell G. Fortschritt d. Chd. Röntgenstrahlen 7: 333-344 (Feb.) 1937.
 - Morse C. W. and Cole L. G. Radiology 8: 149-153 (Feb.) 1937.
 - Cole L. G. Tr. Am. Gastro-Enterol. A. 20th Ann. Meet. Washington 1933, pp. 240-250.
 - Cole L. G. and others. Radiologic Exploration of the Gastro-Intestinal Tract. By the Cole Coll. Lorator. Milwaukee: Publishing Company 1934, pp. 166-199.
 - Soper H. W. Radiology 20: 76-78 (Feb.) 1933.
 - Ritvo Max. Am J Roentgenol 23: 160-169 (Feb.) 1937.
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 - Lloom A. R. Am J Cancer 18: 29-31 (June) 1933.
 - Coldfarb S. J. New York State J. Med. 37: 604-605 (June) 1937.
 - Kantor J. I. Regional (Terminal) Ileitis. R. R. R. 1937.
 - J. A. M. A. 103: 2016-2020 (Dec. 29) 1934.
 - Mackie T. T. and Pound R. F. Change in the Gastro-Intestinal Tract in Deficiency States. J. A. M. A. 104: 113 (Feb.) 1935.

area may be due to lesions elsewhere in the body and that, conversely, general abdominal complaints or pain in the lumbar and sacral regions may be due to a pathologic process in the right iliac fossa. Furthermore, it is a fact that lesions of the right lower quadrant are not infrequently associated with other abdominal diseases or systemic infections.

In view of the foregoing facts it was thought of interest to report a series of cases, from both a medical and a surgical standpoint, of lesions of the right lower quadrant which presented various types of clinical problems. Gynecologic cases were not included in this study.

In the accompanying table we have summarized the case reports, emphasizing the use of the measures which were employed to detect and to treat the pathologic processes found. The following protocols are illustrative.

REPORT OF CASES

CASE 1—L. D., a man, aged 41, first seen in June 1935, had a history dating back to 1918 when he had a severe attack of pain in the right lower quadrant with cramps, while on the battlefield in France. He could not pass gas or have a bowel movement. The attack lasted for three days and was diagnosed as acute appendicitis. No operation was done. In 1919 an appendectomy was performed in this country, when after roentgenographic study chronic appendicitis was reported. In 1921 a hemorrhoidectomy and in 1925 an operation for right inguinal hernia were performed. In 1932 the patient had a second severe abdominal attack similar to the one in 1918. Since then he had suffered many similar attacks which increased in severity and were accompanied by frequent mucous stools. The results of numerous routine x-ray and laboratory examinations of all types in many institutions were reported persistently negative. Occult blood was found once in the stool. All observations pointed to spastic colitis and a large ampulla of the rectum.

In February 1936 a thorough roentgenographic study of the gastrointestinal tract gave similar results and in addition pointed to the possibility of some adhesions between the small

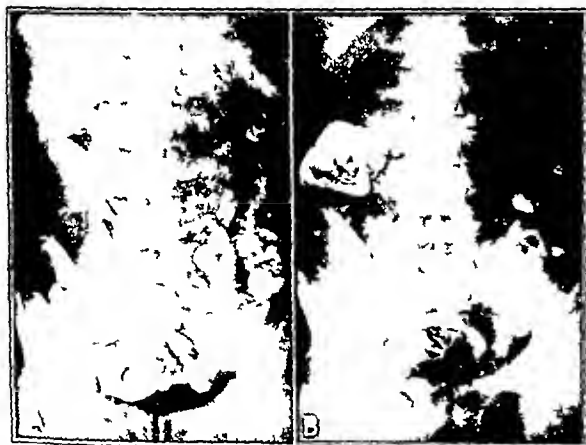


Fig. 1 (case 1)—A, four hour film showing that the barium sulfate had stopped short at the ileocecal region. B, a six hour film revealing a lack of proper filling in the lower portion of the cecum. In the upper portion the barium shadow shows quite a sharp cut off at its base. Within the shadow there appear to be coils of terminal ileum.

intestine and the site of the operation for hernia. June 19, 1936 the patient experienced an exceptionally severe attack of pain in the right lower quadrant although he did not report for examination until June 30. He had marked tenesmus and a slight mucous stool every fifteen minutes. Physical examination revealed a point of exquisite tenderness with rigidity midway between the appendix and the hernial scar. Subsequently tenderness was also elicited over the cecum and the ascending colon where a definite doughy mass with borborygmi could be

felt. The temperature and the blood count were normal. The stool showed a large amount of occult blood but no ova. The acute condition gradually subsided, leaving soreness and intermittent cramps which the patient described as a stiffening of the intestine.

A study of the small intestine, oral method, was made on July 2, 1936, and this examination revealed the lesion (fig. 1). The preoperative diagnosis was intussusception of the terminal part of the ileum into the cecum, the probable activating cause



Fig. 2 (case 2)—Characteristic string sign of regional ileitis (Kantor) after duodenal instillation of barium sulfate.

of which was a pedunculated tumor originating at the ileocecal junction. At the operation July 13 chronic intussusception, with a large papilloma of the cecum, was found. The terminal part of the ileum was also constricted. A one stage resection of the terminal part of the ileum, the cecum, the ascending colon and half of the transverse colon was performed with side to side ileocolostomy. The patient made an uneventful recovery, gained 30 pounds (13 Kg.) and is comparatively symptom free.

CASE 6—B. T., a white man aged 63 was well until four months prior to admission, Oct. 22, 1935, when he began to experience attacks of generalized cramplike abdominal pains which bore no relation to food, did not radiate and were accompanied by nausea and constipation. He had lost 16 pounds (7 Kg.) during the preceding four months. Physical examination revealed a slightly distended abdomen with a protuberant umbilicus, the liver was enlarged but the spleen was not palpable. A nonmovable slightly tender mass was felt in the region of the cecum over which there was a tympanic note. The temperature did not go above 100 F. The laboratory examinations revealed a sedimentation rate of 105 mm in forty-five minutes, hemoglobin 92 per cent, red cells 4,500,000, white cells 9,300 and polymorphonuclears 79 per cent (segmented 78 per cent). A roentgenogram of the colon Oct. 25, 1935, revealed a large tumor involving the cecum and the proximal portion of the ascending colon. The descending colon showed numerous large and small diverticula. A diagnosis of malignant growth was made. The surgical division however felt that the condition was inoperable.

The patient was treated medically by means of colonic irrigations, sedatives, antispasmodics and a bland diet. He began to improve and the mass in the cecum gradually disappeared leaving a thickening of the walls. With this clinical improvement there was a gradual decrease in the sedimentation rate to 6 mm in forty-five minutes. Another roentgenogram of the colon taken Nov. 4, 1935, failed to show any evidence of the

Summary of Case Reports

Case	Diagnosis	Comment	Case	Diagnosis	Comment
1 L D	Intussusception of ileum into the cecum with papilloma of cecum	Illustrates value of special x-ray studies of intestine as attack is subsiding but before it has entirely disappeared (fig 1) Described in detail	Case 9—Continued		
2 L M	Regional ileitis	Illustrates the fact that by means of a special study of the small intestine a lesion can sometimes be definitely diagnosed the patient a woman aged 22 had an appendectomy performed for attacks of pain in right lower quadrant of 4 months duration her symptoms recurred once and a half months after operation routine x-ray studies gave negative results a study of the small intestine (duodenal method) definitely revealed the lesion (fig 2) resection was performed	10 A F	Perforation by foreign body of cecum with extensive hyperplasia of adjacent lymph nodes	Illustrates the diagnostic problem presented by perforations of the cecum and the surgical procedure necessary described in detail
3 E F	Diverticula of cecum and probable polyposis of terminal portion of ileum	In a patient with periodic attacks of pain in right lower quadrant diagnosed as chronic appendicitis a study of the small intestine (oral method) revealed diverticula of the cecum and small filling defects in the terminal portion of the ileum which owing to their circular shape suggested a polypoid membrane routine gastrointestinal roentgenograms did not show the lesions (fig 3)	11 M O C	Postoperative adhesions around cecum and calculous cholecystitis	Illustrates the advantage of a thorough examination to reveal abdominal diseases coexisting with a lesion in the right lower quadrant (fig 6) described in detail
4 L	Adenocarcinoma of colon at ileocecal junction	Illustrates the fact that in a case of periodic attacks of abdominal pain and constipation a roentgenogram of the colon may not show any morphologic defect a study of the small intestine (duodenal method) revealed typical step ladder levels and marked dilatation of the coils of the small intestine this pointed definitely to the presence of obstruction which was diagnosed as due to malignant process operation revealed an adenocarcinoma at ileocecal junction which was removed in one stage (fig 4)	12 E S	Angioneurotic edema with visceral manifestations	Illustrates the diagnostic value of history eosinophilia in a patient with angioneurotic edema the onset of the attack resembling appendicitis described in detail
5 C D	Adenocarcinoma of cecum	Illustrates the fact that malignant process in the cecum may resemble acute appendicitis in a woman aged 35 complained of periodic attacks of cramps in right lower quadrant for two years the attacks increased in severity the last one being accompanied by nausea and vomiting a hard tender fist-sized mass could be felt in right lower quadrant temperature 101 F white blood cells 17,300 polymorphonuclears 80 per cent a diagnosis of abscess in appendix was made in the course of further questioning patient stated that at times she passed a considerable amount of bright red blood after colonic irrigations this she attributed to hemorrhoids which were treated after further questioning and physical examination a diagnosis of carcinoma of cecum was made operation revealed an advanced adenocarcinoma of cecum anterior portion of cecum was so thin that only the cecum protected it from perforation one stage resection with ileocolostomy was performed patient made an uneventful recovery	13 M S	Gastrointestinal allergy with symptoms resembling appendicitis	Illustrates the fact that at times gastrointestinal allergy may produce attacks resembling appendicitis scratch tests revealed the allergens described in detail
6 B T	Diverticulitis of cecum	Illustrates the fact that an inflammatory process of the cecum may simulate malignant growth and also illustrates the diagnostic and prognostic value of the sedimentation rate of the blood described in detail	14 D S	Spasm of cecum due to a nutritional disturbance	In a patient on whom an appendectomy had been performed followed by a recurrence of the symptoms the finding of hypochlosterolemia indicated the presence of an underlying nutritional disturbance described in detail
7 R F	Acute intraperitoneal abscess probably appendiceal in origin	Illustrates the value of thorough physical examination and the fact that in the presence of an acute inflammatory process x-ray appearances may be misleading described in detail	15 A R	Spasm of cecum of undetermined origin	A roentgenogram with double contrast medium after atropinization revealed a normal cecum although a diagnosis of malignant disease had been made by routine examination patient has been symptom free since first observed two years ago
8 F R	Acute gangrenous appendicitis and cholecholelithiasis	Illustrates the fact that irreversibility of previous operative observations and typical history the patient with an acute condition in the abdomen should be most carefully examined for the possibility of acute appendicitis	16 S O	Primary tuberculous retroperitoneal adenitis	Illustrates the fact that primary tuberculous adenitis must be considered when a small mass is palpable in right lower quadrant even though evidence of tuberculous cannot be found elsewhere in the body the history and physical appearance point to appendicitis a large tuberculous node and the appendix were removed subsequent treatment of the patient at the E. A. Institute and similar treatment in the country helped to restore her health and well being
9 L	Intussusception of ileum into the cecum with papilloma of cecum	Illustrates the value of special x-ray studies of intestine as attack is subsiding but before it has entirely disappeared (fig 1) Described in detail	17 M G	Tuberculosis of cecum and pulmonary tuberculosis	The lesion in the right lower quadrant was secondary to a focus in the lung although patient had been treated for cold a thorough examination revealed pulmonary tuberculosis with positive sputum secondary tuberculosis of cecum was diagnosed by observation of tubercle bacilli in feces and by x-ray study
10 A F	Perforation by foreign body of cecum with extensive hyperplasia of adjacent lymph nodes	Illustrates the diagnostic problem presented by perforations of the cecum and the surgical procedure necessary described in detail	18 B R	Mucocoele of appendix	In patients with history typical x-ray evidence pointing to a malignant process in the cecum the presence of a movable tumor should make one think of the possibility of a mucocoele of the appendix
11 M O C	Postoperative adhesions around cecum and calculous cholecystitis	Illustrates the advantage of a thorough examination to reveal abdominal diseases coexisting with a lesion in the right lower quadrant (fig 6) described in detail	19 J D	Inflammation of retrocecal appendix	While the history and presence of red blood cells in the urine indicated lithiasis of the urinary tract careful examination determined the presence of an inflamed retrocecal appendix
12 E S	Angioneurotic edema with visceral manifestations	Illustrates the diagnostic value of history eosinophilia in a patient with angioneurotic edema the onset of the attack resembling appendicitis described in detail	20 W W	Regional ileitis with abscess formation and peritonitis	Illustrates how varied a clinical picture a case of regional ileitis may present first a case of regional ileitis was treated for three years at one time it was the patient had a pimple ulcer and it started for it gave him relief for one year then it started again simulated a phlebotomy the fact that appendicitis was the cause of the disease in case of ileitis at the only place of drainage of the abscess was the ileocolostomy was at the only place of drainage

previous tumor formation in the cecum but did reveal diverticula in the cecum, transverse colon and descending colon

The patient made an uneventful recovery and left the hospital symptom free, with a diagnosis of diverticulitis, which probably was the underlying inflammatory process. What additional pathologic change caused the roentgenographic defect and the

pain, the first and the second being accompanied by jaundice Feb 15, 1937, the patient had another attack which at first was thought to be due to biliary calculi as the others probably were. She did not improve. The next day she was brought to the hospital. Physical examination revealed marked distention of the abdomen, general peritoneal rebound signs and exquisite tenderness in the right lower quadrant. A tentative diagnosis of appendicitis was made and immediate operation was advised. Acute gangrenous appendicitis with a walled abscess, was found.

CASE 10—A F, a white girl aged 5, was referred to the hospital as having acute appendicitis on Feb 20 1923. Her chief complaints were pain in the lower part of the abdomen, occasional vomiting and fever of four days duration. Examination showed an obliquely placed, elongated firm tender and nonmovable mass in the right lower quadrant. The blood count showed white cells, 35 000 and polymorphonuclears 89 per cent. During the next ten days the temperature and the pulse rate receded almost to normal. The bowels now moved regularly, but the mass remained unchanged. Roentgenograms showed outside pressure against the cecum and the ascending colon.

A tentative diagnosis of retroperitoneal lymphosarcoma was made and an operation performed on March 5. The tumor consisted of a large mass of lymph nodes between folds of mesentery extending from the hepatic flexure to 6 inches beyond the ileocecal valve. Side to side ileocolostomy into the mid-portion of the transverse colon was performed. The lymph nodes removed at operation showed simple hyperplasia and edema with no evidence of tuberculosis or malignancy.

A second operation was performed two weeks later. The mass had decreased materially in size and the site of the ileocolostomy had healed perfectly. At this time the mass and the involved portion of intestine were removed. Pathologic examination of the intestine and the tumor mass revealed acute suppurative colitis with a perforation 2 cm above the ileocecal valve, and lymphadenitis. The tract of the perforation was lined with granulation tissue and covered in places with cylindric epithelium derived from the mucosa of the intestine. In places minute abscesses were present and giant cells of the foreign

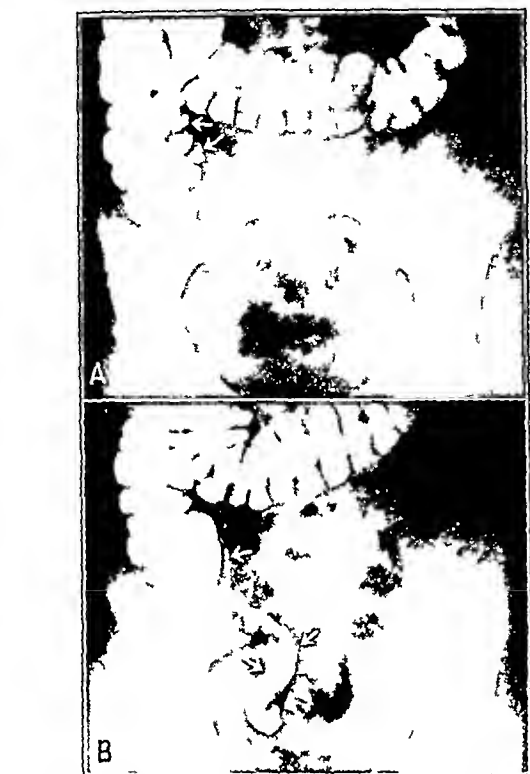


Fig 3 (case 3)—A diverticula of the cecum. B small filling defects in the terminal portion of the ileum which owing to their circular shape suggested a polypoid membrane. The appendix was also visualized.

mass, both of which subsequently disappeared is problematic. We do know, however, that at times diverticulitis elsewhere in the colon may resemble a malignant disease. The patient was readmitted to the hospital Oct 19 1936 for a transurethral resection of the prostate gland which was successfully accomplished.

CASE 7—R F, a white man aged 64 complained of pain and a lump in the right lower quadrant of one week's duration which, after x-ray examination of the gastro-intestinal tract was diagnosed as an inoperable malignant condition of the cecum. The previous history was irrelevant except for a gastro-enterostomy ten years before for an ulcer of the stomach. On physical examination the patient was acutely ill with generalized abdominal tenderness, moderate distention and an exquisitely tender mass in the right lower quadrant which was not movable and did not cross the midline. Rectal examination revealed tenderness and bulging in the right fornix. When the examining finger was removed gas was passed. The temperature was 101.8 F and there were 13 400 white cells, with 80 per cent polymorphonuclears. The diagnosis was intraperitoneal abscess probably appendiceal in origin. The operation showed a large abscess with foul pus having a colon odor and with a thick edematous wall. The pathologic report was 'chronic suppurative granulation tissue with no evidence of tuberculosis, syphilis or malignant change.' The patient made an uneventful recovery.

CASE 8—F R, a white woman aged 62 was operated on for calculous cholecystitis and choledocholithiasis Oct 15 1936. A cholecystectomy was performed but owing to the fact that the patient could not stand any further operative procedure the stones in the common and hepatic ducts were not removed. After the operation the patient had three attacks of severe abdominal



Fig 4 (case 4)—Stepladder levels and marked dilatation of the coils of small intestine after administration of barium sulfate through a duodenal tube.

body type were occasionally seen. The child has now grown into a perfectly healthy young woman with normal bowel movements and normal general development.

CASE 11—M O C, a white man aged 42, gave the following history. In 1912 he was operated on for acute appendicitis and in 1915 for incisional hernia and was also treated for a peptic ulcer. About 1920 he began to have attacks of severe abdominal pain just above the appendix scar. The pain usually came on after eating, it started with a grinding sensation radiated up to the right upper quadrant and was relieved by one or more

enemas. The attacks had been more or less constant the past five months. He was advised that the removal of some infected teeth would help him. The teeth were extracted, but the attacks continued.

While the present condition indicated an inflammatory or obstructive lesion about the cecum, the history and the radiation of the pain made an examination of the gallbladder and the gastro-intestinal tract advisable. Cholecystography showed a

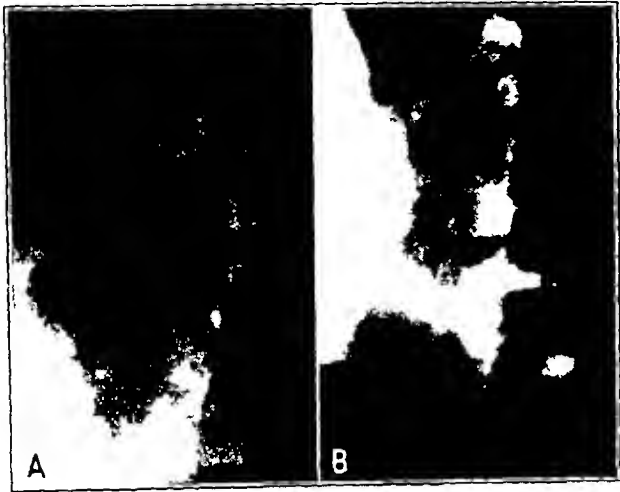


Fig 5 (case 9).—A, large stone in the gallbladder (film taken without dye Jan. 11, 1932). B, stone no longer visualized in the gallbladder region (flat film of abdomen April 14).

somewhat faint shadow with a mottled appearance, but a definite roentgenographic diagnosis of cholelithiasis could not be made. A series of gastro-intestinal roentgenograms gave essentially negative results. On aspirating the fasting stomach preliminary to a biliary drainage numerous blackish particles were found. The microscopic examination of these particles showed numerous cholesterol crystals (fig. 6), the significance of which was emphasized by one of us in a previous article.²

A diagnosis of postoperative adhesions involving the cecum as well as calculous cholecystitis was made and surgical intervention advised. The operation revealed rather dense adhesions between the omentum and the anterior abdominal wall in the region of the old scar. There was also found a definite elongated strand holding the cecum to the anterior abdominal wall, with a large opening beneath it which had allowed a loop of ileum to become caught in it. Two large stones and numerous blackish particles similar to those observed in the fasting gastric contents were found in the gallbladder. These particles were likewise composed of cholesterol crystals (fig. 7). A cholecystectomy as well as a freeing of the cecum was performed.

CASE 12.—E. S., a white man aged 35, was perfectly well until three hours after eating corned beef and cabbage, when he was seized with severe generalized abdominal pain accompanied by nausea and vomiting. The pain subsequently settled over the right lower quadrant. Tenderness was present over the appendix and the cecum although no rigidity or muscular resistance was felt. The temperature was 99.5 F. and the blood count showed white cells 7,200, polymorphonuclears 60 per cent, lymphocytes 29 per cent, mononuclears 1 per cent and eosinophils 10 per cent. Although appendicitis was suspected it was thought advisable to observe the patient further in view of the blood count and the absence of fever and local muscular resistance.

The next day the abdominal pain subsided and urticaria with giant hives appeared all over the patient's body. The eosinophil at this time dropped to 1 per cent. The following day jaundice developed with the following index: bilirubin 1.25. This jaundice was treated with a course of sodium sulfide. The patient was fully treated by means of a course of sodium sulfide. The tests never revealed a

edema with visceral manifestations, as originally described by Osler,³ who stated that in such cases a laparotomy was not infrequently performed.

CASE 13.—M. S., a man, aged 37, complained of periodic attacks of pain in the epigastrium which radiated to the right lower quadrant and which had been diagnosed as chronic appendicitis. The pain was followed in from one half to one hour by a rash over the buttocks, which itched greatly. The pain and the rash usually lasted about ten or twelve hours. Scratch tests showed positive reactions to lettuce, celery, egg white, salmon, onions and tea. When the patient did not eat these foods, he was symptom free. Recently he was seized with a very severe attack in the appendical region followed by the rash. When he was seen the next day no evidence of appendicitis was found. On questioning it was learned that he had eaten onions the night before.

CASE 14.—D. S., a white woman aged 29, first seen Nov. 28, 1932, had had periodic attacks of pain in the right iliac fossa for two years. One year before the appendix was removed in the hope that this operation would cure her. Six months later the pain recurred. She felt better when she ate strained vegetables but as soon as she returned to a normal diet her pain recurred. The pain usually came on about four hours after meals and at times during the night. She was very constipated and had to resort to enemas. She also complained of dizziness, fatigue and headaches. Physical examination gave essentially negative results except that it showed tenderness over the cecum. The blood pressure was 100 systolic, 70 diastolic. The blood count and the urine were normal. The blood cholesterol content was 111 mg. per hundred cubic centimeters of blood. A series of gastro-intestinal roentgenograms revealed pylorospasm but no ulcer. A barium sulfate clisma showed evidence of spasm of the cecum and the descending colon.

Ultraviolet treatment and injections of hydrous wool fat to elevate the blood cholesterol were given as advocated by Leopold and Bernhard⁴ and Berman.⁵ A high vitamin, high caloric diet and irradiated oil orally and by rectum were also prescribed.



Fig 6 (case 11).—Numerous cholesterol crystals together with a slight amount of calcium bilirubinate pigment (preoperative specimen of fasting gastric contents).

The blood cholesterol content rose to 175 mg. per hundred cubic centimeters of blood. The patient has been symptom free since the treatment took effect.

COMMENT

Patients with lesions of the right lower quadrant not infrequently present varied clinical phenomena.

3. Osler, W. M. D. On the Surgical Importance of the Vascular Crises in Erythema Group of Skin Disease. *Am. J. Med.* 3: 754 (April) 1904.
4. Leopold, J. S. and Bernhard, A. *Arch. Internat.* 46: 1929.
5. Berman, Louis. *M. J. Clin. Res.* 80: 123 (Aug. 7) 1929.

which make them difficult diagnostic and therapeutic problems. In the main they may be divided into those with acute and those with chronic conditions. It is generally acknowledged that in most patients with acute symptoms referable to the right iliac fossa an inflammation of the appendix proves to be the etiologic factor. However, the principal diagnostic and therapeutic diffi-



Fig 7 (case 11)—Cholesterol crystals together with calcium bilirubinate pigment (particle removed from gallbladder postoperatively)

culties arising in patients with lesions of the right lower quadrant are usually encountered in patients giving a history extending over months or years. It is unnecessary to dwell on the errors made or on the needless exploratory operations so often performed. Doubtless most of us at some time or other have shared the responsibility.

We would, however, like to emphasize certain facts in connection with this paper. A careful and painstaking history and a thorough physical examination are still of paramount importance even though marked progress has been made in the diagnostic aids which the laboratory has furnished. Furthermore, while an investigation of the gastro-intestinal tract by the usual routine procedures may reveal the lesion, negative results do not always rule out the existence of a pathologic process. Coexisting abdominal disease must also be borne in mind.

We do not believe in repeatedly subjecting the patient to the same gastro-intestinal studies when negative results are reported. Here special diagnostic procedures should be emphasized. A more frequent study of the small intestine as a means of detecting lesions of the terminal part of the ileum and the cecum should be encouraged.

The surgical treatment of lesions of the right lower quadrant will vary as to the pathologic process found. If, however, a definite preoperative diagnosis is made, the surgeon can map out a more comprehensive method of attack. His technic will be surer, surprise conditions at operation will be fewer and the risk to the patient will be much less. The presence of a diseased appendix always demands its removal.

At present there is no standard surgical procedure for the treatment of regional ileitis. The condition may present such varied clinical manifestations that it should

be suspected whether or not the appendix has been removed. If the appendix is still present an appendectomy should be performed at the primary operation when feasible. If abscess formation is found, simple drainage is indicated. If marked inflammatory edema is present, an ileocolostomy with short-circuiting of the affected part by means of healthy intestine well away from the lesion, is to be preferred, with possible subsequent resection. A primary resection is elected by some surgeons. At times an intestinal fistula then results, probably from lack of removal of all the affected area.

In cases of malignant disease of the cecum and the ascending colon, the presence or absence of edema and infection has a deciding role in the type of operation indicated. Our preference is for the one stage resection with ileocolostomy, when possible. If, however, this procedure is inadvisable, the two stage procedure is done or the operation as advocated by Lahey.⁶

All surgeons recognize the fact that marked inflammatory lesions in the ileum and the cecum may give a clinical and operative picture resembling malignant disease. Under these circumstances conservative surgical intervention is judicious.

SUMMARY

- 1 Lesions of the right lower quadrant often present diagnostic and therapeutic problems.
- 2 Special diagnostic methods are essential if routine gastro-intestinal examinations do not reveal a lesion.
- 3 Thorough study of the patient will prevent diagnostic errors and a needless exploratory operation.
- 4 Every lesion of the right lower quadrant does not necessarily require surgical treatment.

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ABSTRACT OF DISCUSSION

DR ERNEST H. GAITHER, Baltimore. The information presented by the authors proves that if one is sufficiently versatile and persevering in the presence of atypical and puzzling syndromes, one will in most instances avoid the pitfalls which await the unwary whose first and last thought on the subject is that most lesions in the lower right quadrant are due to appendical involvement. My experience has been much the same as that of these contributors. In each case, the pathologic condition could easily have been discovered by interested and painstaking study of the symptoms and application of clinical investigations which are available to all and the patient might thus have been spared weary months of pain and discouragement. I am glad to say that after the discovery of the lesion each of these patients made a brilliant recovery. It would be most helpful to remember that a rich nervous supply places the alimentary tract and its changes under the influence of multitudinous impulses coming from all parts of the body. Hence it is most important to study each case in its entirety to distinguish between intrinsic abdominal disorder producing local symptoms, and extrinsic disease producing symptoms referred to various parts of the abdomen, notably the lower right quadrant. In this paper interesting instances have been presented of terminal ileitis, diverticula of the cecum, adenocarcinoma of the colon at the ileocecal junction, acute intraperitoneal abscess, acute gangrenous appendicitis and choledocholithiasis, intestinal obstruction in the terminal ileum due to gallstones and other lesions. It is this type of painstaking investigative diagnostic acumen, which can be developed by all physicians that leads to true progress in clinical medicine. That this progress in diagnostic certainty involves the amelioration of most of the ills of suffering humanity is not the least of our reasons for seeking to establish it.

Clinical Notes, Suggestions and New Instruments

PELLAGRA SUCCESSFULLY TREATED WITH NICOTINIC ACID A CASE REPORT

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It is well known that liver and certain of its extracts are highly effective in the treatment of canine blacktongue and human pellagra. Recently, Mueller¹ and Subbarow² have isolated nicotinic acid from liver. Elvehjem and his associates³

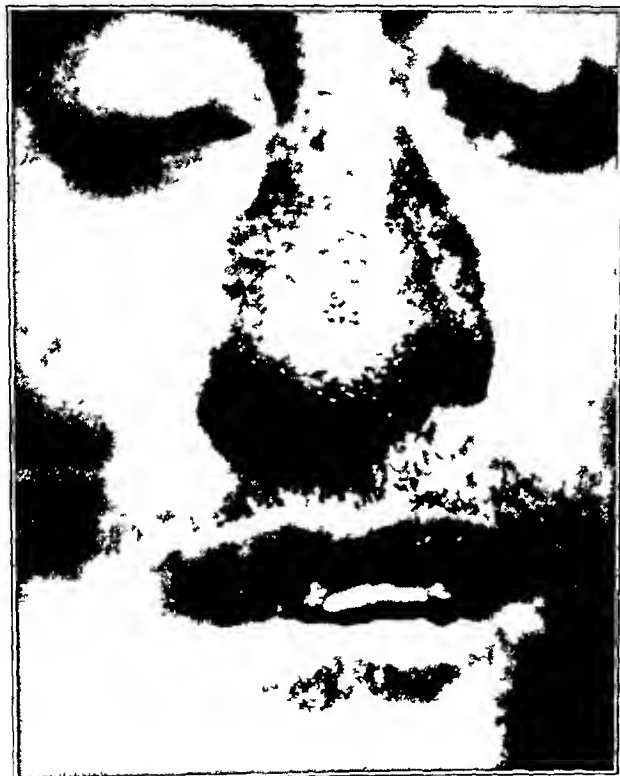


Fig. 1.—Horn concretions in the skin of the sebaceous glands. The projections on about the edge of the nose were present over the entire nose face and forehead but do not appear in the rest of the illustration because they are out of focus.

isolated nicotinic acid amide from liver and showed that pure nicotinic acid (Eastman) would cure experimental blacktongue. This observation has been confirmed by Dann⁴ and by Margolis and his co-workers. The latter found that nicotinic acid in dose of 15 mg. per kilogram of body weight was highly effective in curing blacktongue in dogs and harmless whether administered orally, intramuscularly or intravenously. We have recently had the opportunity of using nicotinic acid in the treatment of a man with a very severe case of pellagra with results so satisfactory that we feel that the case should be recorded.

REPORT OF CASE

W. H. B., a white male farmer, aged 42, weighing 41 Kg., was admitted to Duke Hospital Oct. 20, 1937, with a history of

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recurrent pellagra over a period of fifteen years. His present attack began in the summer of 1937 with glossitis, diarrhea, dermatitis and mild intermittent dementia. His diet has been grossly deficient but there was no history of alcoholism.

The patient was emaciated, dehydrated chronically and intermittently disoriented. The tongue and buccal mucous membranes were slightly reddened but there was no definite papillary atrophy. A typical dermatitis was present on the hands and feet. The orifices of the sebaceous glands on the entire face were plugged with horny concretions (fig. 1). The remainder of the examination revealed nothing of significance except the absence of the abdominal and cremasteric reflexes. Hemoglobin was 13.6 Gm. (87 per cent), red blood corpuscles numbered 4,100,000. Urinalysis was normal. The electrocardiogram showed low upright T waves in all leads.

The patient was fed a basic diet, deficient in the pellagra preventive factor throughout his entire period of study. At the end of the first week it was obvious that he was becoming progressively worse. He refused to eat because he became completely disoriented and developed delusions of persecution.

Treatment was limited to nicotinic acid (Eastman) the patient remaining on the basic diet. A solution was prepared in sterile physiologic solution of sodium chloride so that 1 cc. contained 2 mg. of nicotinic acid. On the seventh day after admission the patient was given intramuscularly 60 mg. of the drug. On the next day he received intravenously 60 mg. dissolved in 1,000 cc. of 5 per cent dextrose in saline solution. For the next six days he received 60 mg. daily, the intramuscular and intravenous routes being alternated. On one occasion he was given intramuscularly 60 mg. dissolved in 6 cc. of physiologic solution of sodium chloride. On two successive



Fig. 2.—Same patient twenty days after photograph reproduced in Fig. 1 was taken and thirteen days after the beginning of treatment.

days 60 mg. was dissolved in 100 cc. of water and given orally. He was given in all 720 mg. of nicotinic acid.

No reaction followed the oral administration of the drug, however a marked flushing of the face, neck, chest and arms appeared a few minutes after intramuscular injection and lasted for fifteen minutes. This same flushing was observed after the patient had received intravenously about 200 cc. of the

6. Ruffin, J. M. and Smith, D. T. A Clinical Study of the Potency of Various Extracts of Liver in the Treatment of Pellagra. *South M. J.* 30: 4 (Jan.) 1937.

or approximately 12 mg, but slowly faded even though the injection was continued. The pulse respiration and blood pressure were unaffected and the patient experienced no discomfort except a slight feeling of warmth. The intramuscular injections were well tolerated even in high concentration.

The results of this treatment were dramatic. There was a striking improvement in the appetite within twenty-four hours. The mental confusion began to improve after forty-eight hours and he was entirely rational after six days of treatment. Within three days a definite change was noted in the appearance of the skin of the face, and after twelve days the skin was entirely normal (fig 2). On the seventh day of treatment there was a striking change in the electrocardiogram the T waves having returned to normal. On the twelfth day it was noted that the abdominal and cremasteric reflexes were present.

COMMENT

If subsequent investigations prove that nicotinic acid is the P-P factor of Goldberger, it would seem that the problem of the prevention and cure of pellagra have been greatly simplified. Nicotinic acid is very cheap, it cost less than 10 cents to treat this patient. It is possible that it could be mixed with table salt and sold in areas in which pellagra is endemic, similarly to the distribution of "iodized" salt in the districts in which goiter is prevalent.

SUMMARY

A patient who had endemic pellagra with anorexia, dermatitis, sebaceous gland changes and dementia made a dramatic recovery after the administration of nicotinic acid in doses of 60 mg daily for twelve days.

MAGGOT THERAPY IN AN INFECTED WOUND IN HEMOPHILIA

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The treatment of infected wounds in hemophilia is a tedious process requiring caution because of the continual danger of hemorrhage. Certain medications, especially oxidizing agents are frequently contraindicated because of this danger. Recently we have employed maggots in the treatment of a large infected wound in a severe case of hemophilia. The wound healed rapidly without hemorrhagic complications. The literature does not refer to maggot therapy in hemophilia.

REPORT OF CASE

I G, a Jewish youth, aged 19, single, admitted to the hospital Jan 18, 1937, complained chiefly of "swollen knees." The first evidence that he was a "bleeder" occurred at the age of 6 years when a small cut on the buccal mucous membranes bled continuously for twelve days. The condition was diagnosed as hemophilia at that time. However aside from a tendency to easy bruising and slightly prolonged bleeding from minor injuries he remained free of any critical episodes until the age of 13 years. The temporary teeth were lost without excessive hemorrhage except in one instance. For the past six years he had had frequent hemarthroses involving the knees, ankles and elbows. Five years before admission an attempt to correct forcefully a flexion deformity of the left knee resulted in severe hemorrhage which was controlled only after three blood transfusions. Shortly after this a hemorrhage developed in the muscles of the left calf. The skin broke down over the posterior aspect of the leg and an extensive infected wound followed. Although under constant care of physicians this wound did not completely heal for one year. Two years before admission the patient suffered from renal pains and there was hematuria on two occasions. There has been no hematemesis, melena, hemoptysis or epistaxis. He had had repeated hemorrhages into both knee joints for the past six months and had not walked for five months. He had scarlet fever in a mild form without complications four years before admission. The weight had remained quite constant at 150 pounds (68 Kg.) for seven years. The family history is completely known up to and including

the four grandparents and is negative for hemophilia. The mother died at the age of 50 of agranulocytic angina. The father, aged 58, is living and well. The patient has one brother, aged 29 living and well and without bleeding tendencies. He has one sister aged 33, who is married and has three sons and one daughter none of whom display a hemorrhagic tendency. All have normal blood coagulation times. The mother of the patient had one brother and two sisters. One of these sisters has a son who is not a "bleeder." All four grandparents are deceased and none are known to have had abnormal bleeding tendencies.

On physical examination the patient was well developed and well nourished. The head, eyes, ears, nose and throat were normal except that the tonsils were enlarged and cryptic. The lungs were clear and the heart was normal. The blood pressure was 128 systolic, 80 diastolic. Nothing abnormal was found on examination of the abdomen, genitalia or rectum. Neurologic examination was negative. Both knee joints showed a moderate effusion with restricted motion because of pain. There was a linear white scar 15 cm in length on the left calf, which was bound to the underlying tissues. The muscles of the right calf were hard and indurated as a result of an old intramuscular hematoma.

On admission the red blood cells were 5,140,000 per cubic millimeter, hemoglobin 14.5 Gm per hundred cubic centimeters, and the hematocrit reading 42.1 per cent. The white blood cells were 8,150 per cubic millimeter and the differential count was normal. Urinalysis and examinations of the stool revealed nothing abnormal. The Hinton test of the blood was negative. The coagulation time determined by placing 2 cc of venous blood in a 100 by 13 mm test tube at 37.5 C was 125 minutes on admission. Clot retractility was normal. The bleeding time was two minutes (Duke's method). The platelet count was 302,000 per cubic millimeter. The patient's blood group was B. X-ray examination of the knees showed a chronic degenerative arthritis.

The patient was confined to bed and the knees were treated with radiant heat and active and passive exercises. February 4 there was a spontaneous recurrence of hemorrhage into the muscles of the right calf. The leg was elevated, immobilized and packed with ice. Opiates were required for the relief of pain. The bleeding was apparently stopped by two transfusions of whole citrated blood, 300 cc twenty hours after the onset of hemorrhage and 200 cc twenty-four hours later. At this time the right lower leg was approximately three times larger than usual. As a result of circulatory stasis a marked edema developed in the right foot and ankle. The sensations and temperature of the foot remained normal. An ecchymotic area developed over the popliteal space. Several large blisters containing brown fluid formed over the posterior aspect of the leg. As a result of the hemorrhage the hemoglobin dropped from 14.5 to 9.2 Gm per hundred cubic centimeters in spite of the two small blood transfusions. The icterus index temporarily rose to 10. The anemia decreased with iron therapy.

The leg was dressed with sterile precautions daily and care was taken to avoid pressure over the tensely swollen portion. The blisters did not rupture until the twelfth day after the hemorrhage. From this time the open lesions continued to discharge large amounts of blood tinged serous material. In spite of various local treatments a deep denuded area measuring 6 by 15 cm developed over the calf region. There was a smaller lesion 2 cm in diameter in the popliteal space that refused to heal. Both lesions were filled with old blood clots and a low grade infection was present. It was felt that the breakdown of tissue was due to pressure necrosis from the inside. Because of a 25 degree flexion deformity of the knee and a weakness of the dorsiflexor muscles of the right foot, baking and massage were started to the knee and electrical stimulation was begun for the drop foot.

Because of the lack of healing in the infected wounds and a daily fever of from 100 to 102 F, maggots were first placed in the wound five weeks after the hemorrhage. Dressings were changed daily and additional maggots added as necessary. During the next week all the old blood clot and much of the necrotic material had been removed by the maggots. The temperature dropped to normal. The gastrocnemius muscle was exposed and the wound at this time measured 45 cm in depth. It was undermined from 3 to 5 cm in all directions.

From the Thorndike Memorial Laboratory, Second and Fourth Medical Services (Harvard) and the Surgical Research Laboratory, Fifth Surgical Service (Harvard), Boston City Hospital, and the Departments of Medicine and Surgery, Harvard Medical School.

Maggot therapy was continued for four weeks. The skin layer healed to the muscle tissue, leaving two long narrow sinuses. Healing might have been hastened if it had been feasible to expose these sinus tracts surgically. Nevertheless, during the four weeks that the maggots were used, the infection entirely cleared up and the wound healed rapidly. At the end of this period a clean granulating area measuring 1 by 5 cm remained. This healed completely in two weeks with the application of warm boric acid packs. At no time during maggot therapy was there any evidence of bleeding, although the healing tissue was extremely vascular. Throughout this period the coagulation time of the blood was never less than two hours and varied between 122 minutes and 188 minutes. The patient became ambulatory and was discharged from the hospital May 8.

SUMMARY

In a case of hemophilia with an extensive wound resulting from necrosis of a hematoma maggot therapy was used with rapid clearing of the infection and resultant healing without any complicating hemorrhage. Five years before this patient had an almost identical lesion on the opposite leg resulting from the same cause. This wound did not completely heal for one year, while the lesion reported here healed in three months. Apparently maggot therapy may be used in wounds in hemophilia, after the cessation of active bleeding, without danger of hemorrhage.

Special Article

POSTGRADUATE INSTITUTE ON PNEUMONIA

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The Early Clinical Diagnosis of Pneumonia

DR. WILLIAM S. McCANN, Rochester, N. Y. Recent advances in the treatment of pneumonia yield dramatic results with certain types of the disease, notably type I. In the records of the Strong Memorial Hospital cases of type I pneumonia treated in the first ninety-six hours had a mortality rate of 11 per cent as contrasted with 44 per cent in cases treated later than ninety-six hours, and 4 per cent of all cases of pneumonia in which treatment was given. The advantage of beginning treatment in the first day is clearly apparent. The early clinical diagnosis of pneumonia is of such importance that each day that the diagnosis is delayed increases the mortality rate. The early diagnosis of pneumonia is of such importance that each day that the diagnosis is delayed increases the mortality rate. The early diagnosis of pneumonia is of such importance that each day that the diagnosis is delayed increases the mortality rate.

Signs of pneumonia in the lung are almost never present at the onset and may not be present in characteristic form for from twenty-four to forty-eight hours or even longer after the onset. In textbooks the sudden onset with a chill is greatly emphasized. While a sudden and characteristic of at least twenty-four to forty-eight hours or even longer after the onset. In textbooks the sudden onset with a chill is greatly emphasized. While a sudden and characteristic of at least twenty-four to forty-eight hours or even longer after the onset. In textbooks the sudden onset with a chill is greatly emphasized.

The ratio of the initial rapidity of the grunting breath-finger pain in the lungs involved, and limitation of respiratory movement on the side involved is an early phenomenon. The decubitus is important. The patient tends to lie on the side of the invasion and almost invariably lies flat. The presence of orthopnea is presumptive evidence against the diagnosis of pneumonia. In such a case the true diagnosis is far more likely to be infarction of the lung. The percussion note and fremitus rarely give consistent evidence during the stage of invasion of the lung. On auscultation the breath sounds over the involved areas may show simply a diminished vesicular murmur, later complete suppression of the breath sounds over certain areas with bursts of fine crepitant rales on inspiration after cough.

The important early clues to a diagnosis of pneumonia would list in the order of their constancy and reliability as follows: 1 Character of breathing, dilated alae on inspiration, rapid, shallow expiratory grunt, low pulse respiration ratio 3 to 1 or 2 to 1. 2 Cyanosis. 3 Dyspnea, cough, pain in the side. 4 Localized limitation of respiratory movements with suppression of breath sounds and frequently fine crepitations. 5 Character of the sputum, blood cells and leukocytes and pneumococci. 6 Onset with rigor. 7 High degree of leukocytosis. Pneumococci of type I or type II are rarely present in healthy persons. When these types are found in blood-tinged sputum there is little reason to doubt the existence of a pneumococcal infection. Organisms of type III and group IV are not uncommonly found in the throats of healthy persons. Their presence in sputum has less significance as primary causative agents in pulmonary disease. In my opinion, x-ray examination is of little value in the early diagnosis of pneumonia. It may be important in differential diagnosis in doubtful cases and special conditions which I shall refer to under differential diagnosis. In true pneumococcal pneumonias the use of the x-ray examination is quite superfluous in the early stages, and valuable time should not be wasted on it as a rule.

As the invasion of the lung progresses, the typical signs of consolidation may be heard at the periphery of the lung in one part sooner than another. Before frank signs of consolidation appear, however, dullness may increase, the character of the whispered voice transmission assumes a bronchial quality, and the rales heard have a consonating quality and seem to be close to the ear. In case of invasion of a new lobe when one lobe is already consolidated the temperature, which has been previously elevated, may drop for a few hours. During this drop the patient exhibits some evidence of shock, the pulse may accelerate, the blood pressure fall, the respirations increase. Cyanosis returns. Suppressed breathing and rales may recur over the new lobe. The temperature after a temporary fall rises again. When such evidence of new invasion occurs the sputum should be retyped. Necropsy sometimes reveals different types of pneumococci in different lobes. This should remind one that patients with pneumonia should be protected from infection with other types of pneumococci introduced by visitors, attendants or nearby patients and make one alert to use specific serums on bacteriologic evidence obtained at each new lobar invasion, whatever the initial type of pneumococcus.

Too much effort should not be wasted in differentiating between lobar pneumonia and bronchopneumonia. A common mistake is to confuse large pulmonary infarcts with lobar pneumonia. The points to remember are that infarcts of the lung are usually found in orthopneic patients. The sputum with infarction is frankly bloody from the start. Fever, leukocytosis and signs of consolidation occur with infarcts, and the physical signs develop more rapidly than in pneumonia. Cyanosis is usually more profound than in a pneumonia with corresponding amounts of consolidation. The diagnosis usually depends on recognition of the associated heart disease or phlebitis from which the infarction originates and the coexistence of orthopnea. should always raise doubt if a diagnosis of pneumonia has been made. The differential diagnosis between pneumonia and pleural effusion occasionally gives trouble. In case of doubt aspiration with a needle will settle the matter. Fluid displaces the heart to the opposite side. Massive atelectasis displaces the heart toward the atelectasis. Massive atelectases may be accompanied by pneumococcal infection. I have seen three types of pneumonias with atelectasis occur in the same lobe in a patient with aneurysm and compression of the bronchus to the lobe. In case of doubt between massive atelectasis or pleural effusion

and pneumonia it is always safe to study the sputum and give serum if a specific type I or II pneumococcus is present. The discussion of differential diagnosis should not overlook the signs of consolidation frequently found in the lung in acute rheumatic fever. These arise in several ways: (1) by compression of the left lower lobe posteriorly by fluid in the pericardial sac, (2) by pleural effusions and (3) by rheumatic arteritis with congestion and atelectasis. There is no such thing as rheumatic pneumonia. Here again doubt will be resolved by study of the sputum itself and by recognition of other features of acute rheumatic fever. In differential diagnosis chest roentgenograms may be of use. Recourse to roentgenology may be had at any time. However, I cannot visualize a situation in which it would take precedence over a careful physical examination and the study of the sputum itself. The collection of sputum is occasionally difficult. In children it may not be expectorated. It is frequently possible to get it on a piece of sterile gauze over a gloved finger inserted well back in the pharynx. In this discussion I have not emphasized the importance of taking a blood culture. I do not mean to convey the idea that I regard blood cultures as of little value. Quite the contrary. I have been more concerned with the early phenomena which would lead to suspicion of pneumonia and which would lead the physician to have sputum and blood culture done, leaving the discussion of these procedures to the next speaker.

DISCUSSION

DR EDWARD S. ROGERS, Albany, N. Y. All are probably aware that in connection with the pneumonia program of the Bureau of Pneumonia Control of the State Department of Health for the past two years there has been a fair amount of general lay educational activity. We are not, of course, attempting to teach the public how to diagnose pneumonia. We do feel that before the methods of treatment which we have can be applied we must be reasonably sure that laymen will consult the physician early in the disease. Therefore we have selected that group of symptoms which are more typical and which the layman should be able to recognize—namely, the chill, pleurisy, rusty sputum and fever. Any one of these four, we are telling them today, are of themselves sufficient indication for calling a physician at once. We are laying particular stress on the development of these symptoms with a preceding story of upper respiratory infection.

The Bacteriologic Diagnosis of Pneumonia

DR J. D. GOLDSTEIN, Rochester, N. Y. The pneumococcus causes by far the majority of all pneumonias. A discussion of the etiology of the pneumonias implies a discussion primarily of the pneumococcus. Morphologically the pneumococcus is a gram positive ovoid organism which on the stained slide may appear in pairs or in short chains. Originally the pneumococcus was put in the streptococcus group and as it is examined under the microscope one may not be able to differentiate the two. There are, however, certain bacteriologic criteria by which this differentiation can be made. One is the presence of a capsule on the pneumococcus; the other is that the pneumococcus is bile soluble. In addition, it is possible to recognize the organism by its colony growth on blood agar. It is known that pneumococci differ antigenically; in other words, there are different types of pneumococci. This was suggested over thirty-five years ago by Neufeld. With the impetus of the large number of pneumonias seen during the war period, Dochez and Avery were able to separate out three definite types, I, II and III, and a large group, the so-called group IV, in which were placed all those not in the first three types. From 1929 to 1932 Dr Georgia Cooper and her associates defined twenty-nine types of pneumococci in group IV. These types were just as distinct as the previously recognized types I, II and III. There is a very small amount of crossing of these types, as for instance between types III and VIII, II and V, VII and XVIII, and XV and XXX. This crossing is not of significance as the methods of identifying the separate types are adequate to differentiate them.

The classification depends on the type of carbohydrate substance which the organism contains. This carbohydrate is present in the capsule. The details of this phase of the problem were clarified through the work of Heidelberger, Goebel

and Avery. It is known now that the pneumococcus contains two fractions: the carbohydrate fraction contained in the capsule and the protein fraction in the body of the organism. Type specificity depends on the carbohydrate substance in the capsule. The distribution of pneumococci is of importance. In different years one will find a preponderance of a particular type of pneumococcus. The preponderant type will also vary in different communities in the same year. In Rochester we have a list of 805 typings from October 1935 to October 1936, and from this table one can get an idea of the distribution of types for this period. During this period type I was found ninety-one times, type II fifty-nine times, type III 162 times and all others 493 times. In general, it is worth noting that between 55 and 60 per cent of pneumonias are usually due to types I and II, about 35 per cent of type I and from 20 to 30 per cent of type II.

Pneumococci of types I and II are rarely found in the throat of a normal person. This, however, is true only in a limited sense. Types I and II and other types of virulent pneumococci are found in the throats of many normal persons who have been in contact with known cases of pneumococcal infection—not only of lobar or bronchial pneumonia, but of any type of pneumococcal infection. The discussion as to whether or not there is a carrier stage has been answered definitely. Carriers of virulent pneumococci do exist, usually in contact with a known case of pneumococcal infection.

One must know the type in order to be able to use the serum that is indicated. That is the obvious reason for the impor-

Occurrence of the Various Types of Pneumococci

Type	Type	Type	Type	Type	Type
I	91	IX	18	XVII	22
II	59	X	7	XVIII	10
III	162	XI	13	XIX	25
IV	13	XII	21	XX	20
V	36	XIII	14	XI	9
VI	26	XIV	18	XII	11
VII	27	XV	5	XIII	10
VIII	64	XVI	5	XIV	13
Total					501

tance of typing. The importance of early typing will be just as obvious from the following papers and from what Dr McCann mentioned. The mortality is directly in relation to the speed with which one gets serum to the patient. This has been statistically proved repeatedly, and I think it can be said that it is an accepted fact. If serum is given early, good results will be obtained.

What about the methods of typing? Since 1902 a method has been written into the literature which is now preferred. Neufeld in 1902 wrote that when a pneumococcus is injected into a rabbit and an antiserum is produced and then the pneumococcus is mixed with the serum the pneumococcus changes in appearance by becoming much swollen. He was able to identify the organism by this reaction. In 1932 Armstrong, Logan and Smeal in England and in 1933 Sabin in this country again worked with this technique, the so-called Neufeld or quellung reaction. It is a simple test: a drop of sputum, a drop of dye and a drop of serum examined microscopically. The preparation is examined in five or ten minutes and one either does or doesn't see the reaction. It is specific. It is 90 per cent efficient, as checked by the reliable and relatively absolute mouse method.

What procedure should one follow when a person suspected of having pneumonia is admitted? This may be heresy, but I say that to do typing alone and depend on the quellung reaction alone requires a certain amount of unjustifiable courage, particularly if one is not acquainted with the test. The people who work in laboratories expect an error of from 5 to 10 per cent in working with the quellung reaction. They check themselves by repeating the test and by further procedures. Therefore the ideal thing to do with a sputum specimen is to send it to a laboratory, which is best equipped to do this type of work.

We use a blood culture as a reasonably good prognostic index, and we use the blood culture as a reasonably good

criterion for the intensity of treatment. We don't always think of it as a typing method yet it may be the only method that will work. One other important advantage about the blood culture should be obvious, when one has a type III sputum report and a type I blood culture report, obviously one thinks of and uses the type I serum. Mixed infections do occur. A mixture is not infrequent. The blood culture is obviously of importance as a typing method as well as a prognostic index. A thick, glairy, tenacious, slightly blood tinged sputum is best for a quelling reaction. In some patients one does not get sputum. The thing to do is to swab the throat as thoroughly as one can and see if coughing can be induced. In children it is worth remembering that sputum is swallowed and occasionally the stomach tube will produce a suitable sample for typing. One should get whatever sample one can and by all means persist in trying to get the sample. Speed is obviously essential, and the best way to get speed is to take advantage of the nearest laboratory. A blood culture should always be used. Finally, it is worth checking the typing. Our quelling reactions are checked by the macroscopic tube method. We find discrepancies. Not only will one check the inaccuracies of the laboratory by sending in a second sample of sputum, but there are mixed infections which may be so clarified.

DISCUSSION

DR. ROGERS: I think that probably all physicians have at their command many ways of treating pleural pain. Any means of relieving pleurisy enough so that the patient can make the necessary effort to cough up a good specimen will pay one for time and effort. Why do I say this? Because if one has to resort to taking a blood culture it will take from six to eight hours, probably, to get a report. Therefore, two or three hours spent in trying to get a sputum specimen would be to the advantage of the physician and of the patient. Furthermore, one can place more reliance on the report of the sputum specimen. On the use of opiates opinion is somewhat divided. I think that early in pneumonia the discreet use of codeine to relieve pain may be justifiable. The use of morphine has come in for a great deal of criticism probably well founded. Another point of practical importance is that if one has a specimen particularly in the middle of the night, one will save time by telephoning the laboratory from the patient's home before sending the specimen. The principal sources of error in typing are not going to be in positive reports from the laboratory but in negative reports. I think one might well be able to pick up IV report. If it is group IV and one has a blood culture of lobar pneumonia it is well to repeat the blood culture. The typical case of lobar pneumonia is more of the type for which we have serum. If the blood culture is negative it probably means that the patient did not receive a satisfactory specimen. Of course the blood culture and the specimen. The two together—serum and blood culture—proved the most accurate method generally available for typing, having perhaps lung suction which is not so easily applicable outside certain clinics. As a result of our first two years' study we found that in all the type I cases which had blood culture were done in hospitals only 30 per cent of the type I pneumonia in hospitals are having blood culture. There is a point to develop our blood culture further but the answer to that I don't know. I put it out as a question somewhat of a question and your thoughts on it will be more than welcome.

Oxygen Therapy of Pneumonia

DR. J. G. M. FELLOWS: New York. Not every patient needs oxygen but there are a few for its use. In pneumonia it is used in a fever and a temperature of 104 or 105. When one is resting and there is apillary suffocation consolidated lung this want without pneumonia and these circumstances. If one

wants to get more water out of a faucet than is able to pass through at a given pressure, one can increase the pressure. That is exactly what we do when we give oxygen. We increase the pressure of the oxygen at the interface. We give oxygen when there is an increase in the pulse rate an increase in the respiratory rate or an increase in the nervous irritability. At Harlem Hospital, where we cannot always observe the capillaries of the skin, we give oxygen when the pulse becomes 120 or when the patient is nervous and irritable.

Intravenous oxygen is dangerous. Subcutaneous oxygen is inefficient. It can be given with a catheter, a method which has many objections, although a catheter or rubber tube is always at hand. Then one can use an inhaler, a pronounced metal inhaler which just fits within the nostrils. Another method is to use a mask which fits about the face. Finally one can use either a tent or a chamber. Each of these methods has its place. Ordinary industrial oxygen best taken from the ordinary industrial tanks, is needed. A gauge is needed to show the rate at which the oxygen is being delivered. Finally one needs to know whether there is any oxygen remaining in the cylinder. There is also needed a method of moistening the oxygen, because dry oxygen is irritating to the nasal mucous membranes. How high must the gradient be in order that we shall have efficient oxygen therapy? All I can say is "enough" because what will be adequate for one patient will be utterly inadequate for another. Ordinarily the gradient is about 70 mm of mercury. That is partial pressure. We can lower the need for oxygen by lowering temperature either by skillful nursing, which means more rest, or even by the use of antipyretics, or we can supply enough oxygen. Ordinarily the venous blood contains 55 per cent, or 40 mm partial pressure of oxygen, and the arterial blood 1342 per cent, or 100 mm of pressure. In this room it is 21 per cent, or 160 mm. In the alveolar air it is 145 per cent, or 110 mm, so that the respiratory gradient is the distance between 110 and 40. In the expired alveolar air, when oxygen is being supplied by a nasal catheter at the rate of 4 liters a minute, there is 30 per cent oxygen in the alveolar air, or a pressure of 226 mm, and the respiratory gradient becomes 166 mm as opposed to what it was before, which was 70 mm. If a much more rapid flow, 80 liters a minute, is being used, the normal gradient has been increased at least fourfold. Oxygen in an ordinary commercial cylinder is adequate. There is no medical oxygen. Regulators are important, and there are two types. One type has a variable orifice and the other a fixed orifice. There are two ways of giving oxygen directly from the cylinder. There is a device which takes the oxygen just inside the nostrils and there is the catheter which carries the oxygen into the pharynx. Even writers who are most enthusiastic for the catheter admit that in 15 per cent of the cases they are unable to use it because the patient gags and rejects it. Patients do not reject the inhaler, because of the difference in the point at which the oxygen is discharged. Oxygen is accepted more readily when it is delivered to the mucous membranes of the nose rather than in the pharynx because the impact depends on the resistance and the size of the opening. It makes a difference whether the inhaler discharges the oxygen close to the mucous membranes or at a distance of 1 inch or an inch and a half because the pressure rapidly falls after it escapes from the orifice. With an expiratory flutter valve mask one can get a higher concentration of oxygen than with the catheter or nasal inhaler or even a well run tent or chamber. At 4 liters a minute one can get from 29 to 33 per cent oxygen in the alveolar air of a tent which was the same as a chamber gave from 35 to 39 per cent oxygen. At 6 liters we got from 42 to 42 per cent oxygen which was the same as a chamber carrying from 39 to 40 per cent. With 8 liters we could get exactly as good oxygen concentration as in a chamber. The purpose of a tent is to confine oxygen and when we confine the oxygen we also confine carbon dioxide, heat and moisture. We also stop or reduce the air circulation. It is thus necessary to provide an air conditioning adjunct to every tent. The great advantage of the chamber is that one can be with the patient. The great advantage of a tent is that there is no patient about the patient's face. The great advantage of the mask is that it can be applied to almost everybody, except those who are very sick or delirious and won't permit any device to

on the face, or patients with obstruction to their noses. Oxygen will never of itself, probably, cure a patient with pneumonia, but oxygen keeps the patient alive until his own mechanism or the serum brings about recovery.

I have encountered not infrequently commercial organizations that were selling oxygen equipment or providing rental service, who state that analyses have been shown to be unnecessary. That is absolutely untrue. Analyses should be made at frequent intervals. It is so simple that any really intelligent person in the home can be taught to carry it out. There is one thing ever to keep in mind in oxygen therapy and that is the hazard of fire from explosion. It is practically negligible if precautions are observed. Keep sparks of any kind away from the vicinity of the oxygen equipment. It is not advisable to go into an oxygen tent with electrical equipment that is liable to make a spark. Inflammable materials that are more liable to spontaneous combustion should be removed.

Serum Therapy of Pneumococcic Pneumonia

DR RUFUS I. COLE, New York. I have been able to study in the last few years more than 2000 cases of pneumonia. Certain cases of pneumonia are associated with pneumococci in the sputum, certain other cases are associated with streptococci and others with staphylococci, but little thought has been given as to when pneumonia is actually present. The trouble is not so much to differentiate pneumonia from other conditions such as aneurysms or fluid but to say when a patient actually has pneumonia. In at least 60 per cent there occurs a preceding upper respiratory infection, and finally the patient begins to expectorate sputum and the doctor is called in.

Pneumonia is an acute inflammatory disease of the lungs. Sometimes pneumonia can be determined only by x-ray examination. My associates and I have had 1,600 and some cases which we call lobar pneumonia. We have had 200 cases of streptococcic pneumonia, a smaller number of staphylococcic pneumonia, and so on. But when all these cases are taken away, there is still left a group of cases in which pneumococci were present but the symptoms and features which we consider as characteristic of lobar pneumonia were not present. Those cases we call atypical pneumonia. The term "atypical pneumonia" is a better term than "bronchial pneumonia" for pneumonia in which the symptoms and signs are not characteristic. It is probably better, however, that every case manifesting severe symptoms, in which there is pain, cough and, above all, bloody expectoration, should be called lobar pneumonia and should be treated as such. The epidemic of pneumonia that occurred in 1917-1918 was undoubtedly due to streptococci. In 1918-1919 there was a great increase in staphylococci. It seems rather unimportant and rather misleading, therefore, to think of pneumonia as being a fixed condition. That is why it is so difficult to determine the exact therapeutic value of any kind of treatment. Not only does the kind of pneumonia vary, but the severity is of various grades. It is only a few years since all forms of intestinal infections were called inflammation of the bowels. This included typhoid, the paratyphoid fevers, dysenteries and formerly appendicitis. It seems to me that the situation with regard to pneumonia is similar. There are one or two conditions in which the features are characteristic and definite and in which the disease is probably transmissible directly from patient to patient. Then there is a group of conditions in which the symptoms are much less constant, which appear widely in a community and then may disappear entirely. It is interesting that, in all these atypical forms of pneumonia in which pneumococci have been found present, in no case have type I pneumococci been present and in a very limited number of cases type II. The question has sometimes arisen whether these type II infections were not due to the so called II-a. When one talks, therefore, of the treatment of pneumonia one has to talk of the treatment of a large group of conditions, and the treatment may be very different.

Many years ago it was thought that if patients with type I pneumonia could receive large amounts of serum and receive this serum intravenously so that it could reach the locus of infection certain patients at least might be saved. This belief was based on experimental evidence, and it seems to me that

even today this evidence is of great value in helping one to decide for oneself whether or not one will use this method in the treatment of type I pneumonia. Animals, and especially rabbits, could be actively immunized against very large doses of type I pneumococci. Finally, they could be given doses thousands of times larger than the dose which would kill an animal not so treated. Then we found that the serum of these animals, when placed in the peritoneal cavity of mice, together with doses of culture much more than would kill a normal mouse, resulted in the mice being entirely free from any symptoms. Other mice receiving smaller amounts succumbed readily. So we began the treatment of patients with large doses of immune serum received from horses. This serum was given intravenously. It required a little courage at that time to treat patients with these very large doses given intravenously, and if one is a little worried today about giving serum to patients in small doses, one may think how much greater our trepidation was when we gave 100 cc of horse serum every few hours. But our experience soon showed that whereas many of these infected patients had previously had positive blood cultures, when the serum was given in large doses the blood cultures became sterile. That seemed to me more important than the fact that many patients recovered. Furthermore, the results so far as mortality statistics go have been most encouraging. Why we had to give such large doses of serum were at first obscure, but gradually it became evident, through laboratory studies just why it was necessary. Pneumococci are virulent only because they possess capsules, and these capsules in some mysterious way prevent the leukocytes from taking them up and destroying them. There are various methods now for getting rid of these capsules. Pneumococci of the most virulent type may be made to grow having no capsules whatever, and these pneumococci when injected into animals cause no infection, and when they are placed in mixtures together with leukocytes the leukocytes take them up readily and destroy them. But this capsular substance is set free, as is now known, in the circulating blood and fluids of the body. In the very ill patient the amount of this capsular substance in the blood may be very large. It frequently is excreted in the urine. When immune serum is added to this capsular substance, the so called antibodies of the serum become fixed by the capsular substance, and so the bacteria having capsules may be entirely unaffected by the immune serum. For instance, if one takes pneumococci, places them on a slide and adds a great deal of capsular substance to the surrounding medium, the amount of phagocytosis which occurs when the immune serum is added may be very slight. In the patient ill with pneumonia, before the pneumococci can be affected it is necessary that all the capsular substance in the body be attacked by sufficient serum so that there will be a surplus remaining after all the capsular substance has been united and fixed by the immune bodies. That is the reason why it is so important to give large amounts of serum. It is the reason why it is important to give the serum early in the disease, before large amounts of the capsular substance have been formed.

We have treated more than 500 cases of type I pneumonia with immune serum over a long period of years, and the results clinically have been uniformly satisfactory. In this series the mortality rate in the cases treated in the first three days has been under 48 per cent; in those treated on the fourth day it has been 8 per cent; on the fifth day, 8.6 per cent; on the sixth day, 19.5 per cent. It is therefore obvious that the earlier the patient is treated, the more satisfactory the results will be. Fortunately we have in New York State, I think, the best public health laboratory in this country and probably the best in the world. It has worked continually all these years on producing better serum—concentrating the serum. By that I mean removing the portions of the protein in the serum which are ineffective. As a result it has produced a serum which is concentrated at least three or four times. The methods of testing the serum have been greatly improved, although they are not ideal as yet because no method of testing serum can be perfectly satisfactory in which living animals such as the mouse must be employed which vary so much in their resistance and their susceptibility to disease. A method of deter-

mining the so-called immunity serum has been devised, so that we can tell with a considerable degree of accuracy just how much of the immune substance we are giving to patients. We have always given much more serum, I think, than any one else. Our dosage, when whole serum was employed, was 100 cc at first, and we continued that every eight hours until there was definite evidence that the serum was effective. We have sometimes given over 2 liters of serum to a patient with lobar pneumonia, in a number of cases with good results. We now give 90,000 units at the first dose and repeat this as often as necessary until the symptoms are alleviated. I think this is very important. There is no way of telling accurately when a patient has had enough serum, but there is one method which helps us very much, and that has been a method devised by Dr. Francis. This method, however, is not completely accurate. In certain cases in which there is a positive skin reaction it has been necessary to give more serum. Large doses of serum should be employed and they should be repeated and continued until definite signs of effect on the course of the disease are obtained. We are fortunate in now having in this state a large supply of serum which we can feel is effective and trustworthy.

Up to recently, most of the serum used in the treatment of pneumonia was derived from horses. During the last year a number of cases have been treated with serum made by immunizing rabbits actively to pneumococci. The rabbit serum theoretically should be effective, chiefly because it has been shown that the molecular size of the protein which represents the antibody, when derived from the rabbit, is very much smaller than that in the horse serum. This has been determined by methods of ultrafiltration. The rabbit serum also has been much cheaper to make than the horse serum. Thirty-two cases have been treated with the rabbit serum, and the clinical results, so far as one can judge from mortality, have been very satisfactory. The objection to the use of the rabbit serum is that the chills, which occur also following the administration of horse serum, occur with greater frequency and severity when rabbit serum is employed. Various methods have been used to get rid of this chill-producing substance. It has been found that by giving the patients acetylsalicylic acid just before the serum is administered the frequency and severity of the chills may be to a considerable extent reduced. We are now employing rabbit serum entirely with our patients, but I think this is a special problem one that should be undertaken in a special place under favorable circumstances until it can be determined whether or not rabbit serum is actually more effective than horse serum.

In the cases in our experience where the fever continues high where the respirations remain rapid and cyanosis continues after two or three days of serum treatment, we have found a serious complication such as endocarditis or meningitis. In the last fifty-one cases of type I pneumonia treated with concentrated horse serum and rabbit serum, not one of our patients has died. This, however, is a record which probably cannot be repeated. I think all the statistics indicate that if serum is effective in type II pneumonia, it is much less effective than in type I. This would be expected from the experimental evidence. It is much more difficult to produce an effective serum for type II and with such serum it is much more difficult to save animals highly infected. This was observed before we ever began treatment with serum, and the experimental evidence has been fully confirmed by clinical observation. However, some of the studies have indicated that the mortality rates in type II pneumonia may be reduced by the proper therapy and active use of type II serum. My own feeling is that every patient with type II pneumonia should receive serum, but the difficulties of treatment the necessity for a large amount of serum the necessity for constantly repeating the treatment. In the present than in the past few years I am told a large percentage of this type of pneumonia as in Scotland of type II

In New York, where previously we had as many as 15 per cent of the cases due to type II, there has been a distinct diminution. Last year we had only 11 per cent.

With regard to the other types in which serum is now provided—types V, VII, VIII and VI—these belong in the group in which the severity is much less. If we have a method by which the mortality may be reduced 3, 4 or 5 per cent it certainly is justifiable and worth while to employ the serum when the diagnosis can be made. In these cases probably the importance of giving continued large doses is not so great as it is in the case of type I and II pneumonia. I would stress the fact that in type I pneumonia large doses must be given they must be given often, and the doctor must see his patient frequently. When type II serum is employed still greater attention must be given to the patient, larger doses must be given and they must be given over a longer period.

The dangers of serum, I feel, have been to a certain extent exaggerated. After the administration of serum in a few cases, there may be immediate reactions in the form of collapse, respiratory collapse, and so on. The number of cases in which these symptoms are of great severity, however, is very small. In my own experience I have seen only three or four cases of severe anaphylactic reaction. Most of the reactions can be promptly controlled by giving the patient epinephrine in small or large doses as necessary. Serum reactions that occur following the administration of serum occur in a considerable number of cases. These, however, are not serious. They are distressing to the patients but the reactions which develop from forty minutes to an hour after the administration of serum are in most cases disturbing chiefly for the discomfort which they cause. The same may be said of the so-called serum disease. Patients complain a great deal about serum disease, and many patients say they would rather die of pneumonia than have serum disease. But when one compares the discomfort caused by this condition with the savings of life which occur from the proper administration of serum, it seems to me that serum sickness may be disregarded.

The chief points that I wanted to make in my talk are that the serum should be given very early, it should be given in large amounts, and its use should be continued as long as there is a chance of the serum affecting the outcome of the disease.

DISCUSSION

DR. ROGERS: Dr. Cole has made the point clearly as to why large amounts of serum are necessary, namely, that the circulating capsular substance in the blood stream must be neutralized by serum before it can get to the bacteria. It is equally important, therefore, to give the serum early before large amounts of this excess substance get into circulation. Not only should it be given in large doses, but it has been definitely indicated by our experience in the last two years that it is necessary to complete within a relatively short time. Extensively spread dosage should be avoided. Dr. Cole mentioned the intradermal test devised by Dr. Francis which unfortunately, because of its difficulty of interpretation is not a widely practical test. Dr. Bullowa has devised another test which is based on a temperature determination indicating the amount of circulating antiserum in the blood stream. We have accumulated data on almost 1800 type I cases treated with serum. About 35 per cent of that represents experience in the homes, not in hospitals. There has been but one death that we are definitely obliged to stamp anaphylactic reaction. There have been a larger percentage, 7 or 8 of moderate to severe reactions, but they have readily responded to appropriate treatment. If patients give a history of sensitivity a reaction may result. There are circumstances under which serum treatment is probably justifiable even though a reaction may be anticipated. The question of desensitizing is not a demic, but serum can be given with great care. In relatively minor degrees of sensitivity epinephrine should help. To some degree there is another consideration which places the patient in the category in which treatment is justifiable and that is pregnancy during the later months. That is distinctly a serious hazard. Dr. Cole mentioned the development of rabbit serum. My greatest fear is that if rabbit serum is used indiscriminately and reactions are encountered it will perhaps darken the future of serum therapy. It should be a very real and

when it has been perfected. There are at present a number of typing stations in the state. Type I serum is available in well over a hundred stations, and there are several providing type II. In the next few weeks we shall start distributing V, VII and VIII. We have, for instance, certain parts of the state where type V pneumonia is the major pneumonia, and there we shall provide type V serum. All are probably aware of the legislative appropriation for this purpose, which was made last spring. We did not get the money immediately, and it takes sometimes as much as a year to get a horse up to a point where his serum is satisfactory. As soon as possible, however, we shall provide our own serum. In the meantime we shall provide what we can and purchase the rest.

Pneumonia Clinic

DR ROGERS. The clinic this afternoon is to be conducted by Dr L A Kohn and Dr W W Fray. Dr Kohn will discuss the clinical side of the cases and Dr Fray will discuss the roentgenologic phases.

DR L A KOHN, Rochester, N Y. We are going to start off by showing a case of type I pneumonia.

Mr P, a carpenter, aged 38, was admitted to the hospital on the third day of what proved to be type I pneumonia. His past history was irrelevant. He never had pneumonia before. He had a cold ten days to two weeks prior to October 5, when on returning home from his work on an outdoor job he noticed that he had a little pain in breathing. The next day, October 6, he went to work but that evening felt really sick. His temperature was 101.4 F. He had a cough and pain on both sides of his chest on breathing. The next morning there were no signs in his chest. His temperature was 104. He had a chill and began to produce rusty sputum.

The morning of the third day of the disease, the day of admission to the hospital, the temperature was still higher, he raised more rusty sputum and the physician found definite signs of pneumonia. On his arrival at the hospital his sputum was taken in the emergency ward and sent to the laboratory and found to contain the type I pneumococcus. His temperature was over 105, the pulse was rapid, 120, and the respirations were rapid. The blood pressure was 110 systolic, 60 diastolic. He was slightly cyanotic, he was perspiring, his breathing was rapid and shallow. He was slightly jaundiced. There was physical evidence of a well developed pneumonia in the lower part of the right lung in back.

The white blood count was 31,000. Blood chemical studies revealed that the nonprotein nitrogen was 59. There was slight jaundice in the blood serum. The icterus index was 18. The blood chlorides were reduced to 517 as opposed to a normal of somewhere around 590. The urine was typical of the febrile patient.

Prior to giving serum, a blood culture was taken, and a careful history was taken to obtain evidences of allergy or previous experience with serums. The cutaneous test was done and the ophthalmologic test was done, and as both were negative 50,000 units of type I serum was given the patient that evening diluted to about 100 cc with sterile salt solution. Prior to this large dose 1 cc was given very slowly diluted to 10 cc by sterile salt solution and an interval was allowed to elapse before he was given the full initial therapeutic dose. There was no reaction to the small dose but forty-five minutes after the dose of 50,000 units he had a chill and his temperature rose to 106.2. He was given a tepid sponge bath, his temperature dropped and about four hours later he was given another 50,000 units. There was no reaction to the second dose.

The next day he received an additional 100,000 units. That made 200,000 within the first four days of the disease. His temperature had fallen not to normal but appreciably, without a critical sweat within the next twenty-four hours and as the blood culture had failed to show growth it was decided to give him no more serum.

By the sixth day of the illness there were distinct evidences of resolution in the right lower lung. The breathing was not so rapid and the general condition was improved. On the seventh day of the illness the white blood count dropped to 10,000 and with minor fluctuations it has remained normal.

This is the fourteenth day of the disease. In his chest at this time there are still a few coarse rales, but most of the dulness and I think all of the abnormal breath sounds have disappeared. He is still coughing a little.

[Here and at other points during Dr Kohn's talk, Dr W W Fray, Rochester, N Y, showed slides of the roentgenograms of the chest of the patient, describing evidences of the disease as shown in the roentgenograms.]

People who attended or examined this patient wore a mask and washed their hands when they left. We consider that all cases of pneumonia are communicable and that people should be protected from possible contagion. The patient was given an adequate amount of fluid and as much food as he could eat without causing further distention. He was given 6 Gm (90 grains) of sodium chloride in the form of pills daily, in addition to salt in his food. He was given mild sedatives to control his cough, and once or twice a small dose of morphine.

One topic that Dr Fray and I were asked to discuss was that of complications of lobar pneumonia. Of the serious complications of lobar pneumonia, or of pneumonia in general, the only one which can be distinctly influenced is empyema. There is only one sure way in the long run of diagnosing empyema and that is to find pus with a needle. Conversely, if one wants to be sure that there is no pus, it is only the needle that will settle the question. As far as I know, no patient has been permanently hurt by having a needle put in the chest when there was no pus there. On the other hand, failure to put a needle in the lung may make a serious difference to the patient. When a patient has a persistent elevation of temperature, persistent elevation of white count, persistent elevation of pulse or any one of these, empyema must be suspected, whether or not there are physical signs.

Meeting of the Medical Society of the County of Monroe, New York

DR E G WHIPPLE, Rochester, N Y. About two years ago the Medical Society of the State of New York, the State Department of Health, and associated with them the Metropolitan Life Insurance Company started an attempt in New York State to lessen the morbidity and mortality from pneumonia. This central group asked each county society to form a local committee. Our local committee has attempted two things. One was to see that information is constantly kept before the medical profession and that such information as is deemed advisable is given to the public.

It is my pleasure and privilege to present Dr Jesse G M Bullowa of New York, clinical professor of medicine at New York University and visiting physician at Harlem Hospital.

The Management of the Pneumonias

DR JESSE G M BULLOWA, New York. I shall give especial emphasis to the specific treatment of the pneumonias with the various serums that are available, to the diagnosis of pneumonia, and to some of the complications.

Most of the primary pneumonias of adults, probably 85 per cent, are due to pneumococci. Probably half of the primary pneumonias of children are due to pneumococci. It should not be forgotten, however, that some of the secondary pneumonias—the pneumonias of children ill with the infectious diseases—are due to pneumococci. Probably one in eight or ten children who develop pneumonia after measles or pertussis has a pneumococcal pneumonia. At the Willard Parker Hospital we had a child with pertussis pneumonia. We found that he had pneumococcal pneumonia, type V, he received serum and recovered. We have had many similar cases. We must make the diagnosis of pneumonia on the clinical evidences, on the history, and on presumptive signs. In pneumonia a history of a common cold which has lasted one or more days precedes the chill or pain in the side of the chest in about 70 per cent of the cases. Then there is a cough—a cough which may or may not be productive.

The diagnosis of pneumonia is often a very simple matter, but often enough it is a matter which requires considerable skill and every possible laboratory aid, including x-ray examinations, blood cultures and other examinations to eliminate other conditions. About one fourth of the cases of coronary occlusion that come to Harlem Hospital come first to my service because a diagnosis of pneumonia has been made.

I hope that the day will come when the diagnosis of pneumonia will be qualified by its etiologic agent, obtained either ante mortem or, if necessary, post mortem, and when that day comes, the physician will have to explain pneumonia deaths just the same as operative deaths.

The whole diagnosis of the type of the pneumococcus which is involved in a pneumococcal pneumonia depends on the capsule swelling—the swelling of the capsule when the organism is brought into contact with specific antiserum. At Harlem Hospital we have abandoned all other methods of typing pneumococci, not because they are difficult to do or because we have not believed in them, because we developed the slide agglutination test in our laboratories, but because we find them no longer necessary. We do a direct sputum examination or examination of the discharges that contain pneumococci. It may not be feasible to spend a sufficient amount of time searching large quantities of sputum for a single pneumococcus, so that we always employ where necessary the mouse inoculation method. The peritoneum of the mouse is a selective culture medium for pneumococci. Not only do the pneumococci grow there and the other organisms die off or are inhibited, the pneumococci in the blood stream of the mouse cause a septicemia.

There are about thirty-two different types of pneumococci. When a report is received that the organism does not belong in any of the types, or when it is type IV (unless it is IV Hooper) or group X, doubt should temporarily be cast on such a report, because the chances are overwhelmingly great that another specimen or more careful study of the same specimen will reveal a pneumococcus of definite type. In 1928-1929 we had 34 per cent of our cases that were not typed. In 1933-1934 we had only six cases, or 1.2 per cent of the cases that were studied at Harlem Hospital in adult patients, and about the same number of children that were not typed. That experience has lasted from 1934-1935, 1935-1936 and 1936-1937, so that I think that it can be said with some definiteness that practically 98 per cent of the pneumococcal pneumonias are due, at least in our community, to pneumococci of specific type for which a typing serum is available. It is true that there are a few additional types which have been recognized, and some of them have been given numbers and some may be substituted for other numbers, like XXVI, a type which is now in dispute, and also XXX. But most patients will suffer from pneumococci which can be given a number.

There is quite a difference in the prognosis in the different types not only in the prognosis there is also a great difference in the treatment because pneumococcus type I pneumonia is benefited by pneumococcus type I serum, and pneumococcus type II pneumonia is benefited only by serum which is appropriate to that type. Pneumococcus type I invades the blood stream in about one fourth of the cases, while pneumococcus type II invades the blood stream more frequently. In the bacteremic cases of the various types the death rate is almost always high, whereas in the nonbacteremic cases it is almost always low. That demonstrates the importance of knowing not only the type of case that is involved but also whether there is a bacteremia or not. It has been my experience that the blood stream is invaded usually in pneumonia of types I and II on the fourth day or later, and it may be invaded quite late in the disease.

Every year we have probably twenty cases admitted to the tuberculosis service at our hospital which are subsequently transferred to us as cases of pneumonia. We have cases that are admitted to us as pneumonia that we transfer to tuberculosis. Sometimes we have both organisms present.

A fall in the pulse rate is the most important single point in judging whether one has given enough serum. Giving too little serum is wasteful of life and of serum because, unless the patient's life is saved all the serum given is wasted. Serum treatment should not be judged by whether a patient has received serum or not. A patient who does not receive a very intense very concentrated ample amount of serum—a sufficient amount so that all the germs are exterminated and can be engulfed by leukocytes—cannot get well.

I want to emphasize the importance of the common statement in the literature that serum does not do anything in the first three days of the disease.

It takes time to treat a patient with pneumonia. It may take six or eight hours, but then treatment is done, as a rule, and the rest of the treatment is relatively simple.

One objection to serum has been that it is expensive. That is a very specious objection. The average cost of serum for a patient with pneumococcus type I pneumonia is probably \$35. The longer one waits, the more it is going to cost and the longer one hesitates about giving serum the longer the illness is going to be, the more money will have to be spent for hospital days care or for special nurses, and one may not have the patient in the end.

The most common type in most communities is pneumococcus I. Next in order are types III, II, VIII, V and VII. We have good serums for types I, II, VIII, V, VII, IV, IX, XVIII, VI, XIX and XII. We also have a serum for type XVII. We had a serum for type XX but it is exhausted but we shall have another supply. If we confined ourselves only to the four most prevalent types for which we have serum we would be able to treat 70 per cent of the pneumococcal pneumonias encountered.

I want to emphasize again that one cannot compare pneumonias as a group; one must compare them only as type.

We had fifty-four patients who were treated with serum in the first four days, and the mortality was 20 per cent. Sixteen patients treated were bacteremic, and only seven of these died or a mortality of a little over 40 per cent. The ratio of the difference between the serum and the non serum cases is 2.6. Now 2.6, when comparable populations are compared and the total numbers included are over 30 means that there are about 970 chances out of 1,000 that there is a significant difference and that the difference in the results is due to the difference in the populations. When we took the first four days serum treatment and compared it with the sixty-two cases treated on the fifth day or later, we found that the ratio of the difference to the error in the early treated cases to the late treated cases is 2.2. It is frequently said that treatment of pneumococcus type II pneumonia is of doubtful value, but I think that after this demonstration, it cannot be said of cases treated before the fifth day. Pneumococcus type II pneumonia requires a great deal more intensive treatment than other types. It requires probably twice as much serum. It requires early treatment.

Of 133 patients with type I pneumonia treated in the first four days, 6 per cent died, sixteen patients were bacteremic and 18 per cent died. After five days there were 190 patients with 89 per cent deaths, there were thirty-four bacteremic patients, with 29 per cent deaths. The ratio of the difference to the error is 1.5, which is not significant. It is never too late to give serum.

With proper precautions the incidence of anaphylactic deaths from serum is about one in 500. Without serum, in pneumococcus type I pneumonia the death rate is one in five. Good refined serum is less apt to give a reaction than crude serum. A good history should be taken. A test for sensitivity should be used—the ophthalmic test or the intradermal test. And it is very important to wait at least twenty minutes before reading the results. For rabbit serum we use an intravenous test. We inject very slowly 0.1 cc of the rabbit serum diluted with 10 or 20 cc of saline solution, and if there is no fall of blood pressure, or not more than 20 mm, we do not hesitate to go ahead and give the serum. I do not believe that one can desensitize a patient if the patient is sensitive to serum, but that does not mean that the patient should not get serum. If one doesn't give serum one may lose the patient anyhow. I do believe one can give serum by inducing a refractory state by giving epinephrine, 5 cc and then waiting at least eight minutes and then slowly injecting the serum. We inject it into the tube of an infusion set and while the patient is in an anaphylactic state.

I should like to mention briefly the adjuvants in the treatment of these pneumonias. I have already mentioned oxygen in my talk at the Pneumonia Institute. If the patient cannot be relieved of his anoxemia, he may not survive to be cured by the serum. Another thing is food. We give our patients a full diet during pneumonias. One never can tell how long a patient with pneumonia will last. He may have more hours of elevated temperature than a patient with typhoid. A very important thing is the retention of tissue fluids.

find that the giving of salt, the giving of infusions to prevent dehydration, the prevention of salt loss, or its replacement if there has been a salt loss, are of vital importance. The best way is to give a 10 per cent solution of sodium chloride, perhaps 30 or 60 cc, and restore the salt without increasing the heat. Few of our patients die as the result of dehydration, and there are a few who die of pulmonary edema. Those are the two main causes of death.

How do we treat pulmonary edema? There are several things. First we want to extract from the lung as much fluid as possible into the circulation, and we do that by injecting 50 per cent sucrose solution, which stays in the circulation for a longer time than dextrose. We use 100 cc and we may have to repeat that amount. Another thing that happens in pulmonary edema is that the antrums leading into the alveoli may be filled with bubbles of fluid, which keeps the oxygen away from the blood capillaries. We feel pretty certain that we can break through these capillaries by giving the oxygen in a pressure of 10 mm of water. We do that with a closed system of oxygen and use a rapid flow of oxygen, probably 15 cc, and measure the amount of pressure in a manometer.

DISCUSSION

DR WILLIAM S. McCANN, Rochester, N. Y. The thing that impressed me most was the way in which Dr. Bullowa follows through—checking up on the adequacy of serum administration. When he had evidence of the adequate administration of a certain type specific serum, and still something seemed to be going wrong with the patient, he investigated the possibility that other types of pneumococci were involved. The whole system by which he has checked himself up is most impressive. I think every one is grateful to him for the point on the importance of the dropping pulse. One thing I missed was a discussion with regard to the frequency and the circumstances under which aspiration from the lung is used.

DR D. B. JEWETT, Rochester, N. Y. I think I must belong to that era previous to 1934. We analyzed our pneumonia cases in the Genesee Hospital within the last year, and our mortality for all type I cases, 150 or 160 cases, was 16 per cent. That is a pretty bad mortality compared with a mortality of 2 or 3 or 5 per cent. I think the secret is that we haven't used serum in adequate amounts and at frequent enough intervals. I presume our percentage of 16 is rather general, but it is obvious that it is not at all the ideal rate.

DR G. P. BERRY, Rochester, N. Y. It seems to me that pneumonia is as much a hospital problem as diabetes. It requires continual following of the patient, laboratory studies, continuous service in the ward. The first hours are the important ones.

DR P. H. GARVEY, Rochester, N. Y. I think Dr. McCann asked Dr. Bullowa the one point I was interested in. We have difficulty in a number of cases in getting sputum early or getting positive blood cultures early. I wonder how long they wait before they do a lung puncture on a patient to obtain positive evidence of a specific type.

DR E. B. SONLE, Rochester, N. Y. I want to ask whether Dr. Bullowa at the Harlem Hospital ever does a urine typing any more. Sometimes we used to have to do that when we couldn't get sputum and before we tried taking lung punctures.

DR P. W. BEAVER, Rochester, N. Y. Referring to the use of rabbit serum, how much rabbit serum is displacing horse serum as a means of treatment?

DR B. J. SLATER, Rochester, N. Y. Would it be possible in this city in the various hospitals to set up certain standard procedures which should be followed in all cases of pneumonia, for example, taking blood cultures so that when a patient is brought into a hospital he would be assured that he would come under the advantage of a system such as Dr. Bullowa has in New York. Dr. Bullowa's lecture was very illuminating and enlightening to me.

DR JOSEPH ROBY, Rochester, N. Y. I should like to ask Dr. Bullowa a question. If one can get the same amount of concentrated serum that we used to give of the old serum, I am wondering about giving 125,000 units at the first dose. Does Dr. Bullowa think that that would be a more dangerous procedure

than giving it every two hours? I will confess that I am much more familiar with the old serum and perhaps have no right to ask that question.

DR E. G. WHIFFLE, Rochester, N. Y. Dr. Bullowa, will you kindly close the discussion?

DR J. G. M. BULLOWA, New York. We did about 2,500 lung suction at the Harlem Hospital. I have published the mortalities in my recently published "Management of Pneumonias." We did that, of course, to determine the reliability of the typed sputum. We know that in 7 per cent of the cases the type obtained from the sputum may not be the type actually causing the disease. In skilful hands—and I train my interns to do it skilfully—we have seen no harm come from it. We have sometimes seen harm come from it in the hands of an intern who was not well trained. Occasionally, if we do it late in the disease, we get a dislodgment of an embolus. Occasionally we get some bleeding, and that may do harm. The thing should be done quickly. If one dallies over it, one is bound to have the patient breathe, and then the needle will cut the lung. It is not necessary in every case. One can turn the patient on his side with the involved side uppermost, have him stay there a short time, and secretion will usually come down into the bronchus and be coughed up. It may not be much sputum, but a tiny fleck can be obtained. As a routine we use laryngoscopy, making the patient cough, having the patient cough against a swab and thus collecting a tiny fleck of mucus. Then we incubate the swab in broth for three hours and then inject the broth into a mouse. We don't use urine typing. If there is sufficient antibody in the urine, the patient is terribly ill and one can probably get it out of the sputum or blood. Testing urine is not easy. Only about 10 per cent of the series showed a positive urine. Those were very sick patients and it was not necessary to use that method.

DR BEAVER asked about rabbit serum. Nobody can tell whether rabbit serum will displace horse serum. The reasons for trying rabbit serum are, first, patients may be sensitive to horse serum; secondly, it is probable that the rabbit serum does, as Goodrich suggests, penetrate farther than horse serum. There are also commercial reasons—it requires a much smaller investment of capital.

Those of us who are working with horse serum will have to work with the manufacturers until they can produce a serum which is concentrated, which should have about 4,000 to 5,000 units per cubic centimeter, which should be possible to give in large doses without giving acetylsalicylic acid first. With the processed rabbit serums we have given about 200 cc and even more at a single injection, preceding the injection with acetylsalicylic acid so as to have the patient in a refractory state. The reason we do not give the horse serum in a large single dose, which is the ideal way, is that we think the chill is distinctly harmful. We do not like to give serum to a patient who has a high temperature, so we frequently lower these high temperatures first so as to have a margin of safety. When the temperature is down to 102, we continue to give the serum. The reactions usually come about one hour or an hour and a half after the injection, so we set the two hour interval so that if there is a reaction we shall not give additional serum. Why some serums can be given in doses of 2 cc or 10, 25 or even 40, without the chill, and others cause a chill with 0.5 cc I don't know. It is that problem with which we are most concerned at the present time—to get a serum that won't give a chill when given in a dose of 125,000 or 200,000 units. We want to be able to give it without giving acetylsalicylic acid.

Answering the question Dr. Slater raised about standard procedure, one of the most difficult things about my pneumonia service is the preservation of the skills that I require. When I lose my interns I have to start all over again. That is probably one of the troubles in most hospitals. Unless there is one man who can plan for a long time in running a pneumonia service—I have planned sometimes for two or three years ahead how I am going to get serum and other things for my service and then I have to educate my interns—unless there is one man in each place who will preserve the skills and keep the interns instructed, one will find it difficult to duplicate what we have been doing in New York. Unless each man is willing himself to plan ahead it would be very difficult to acquire these skills and train the interns.

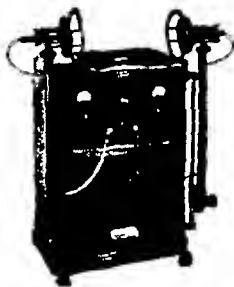
Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION
OF THE FOLLOWING REPORT
HOWARD A. CARTER, Secretary

SUPER FISCHERTHERM (6 METER) ACCEPTABLE

Manufacturer The Fischer Corporation, 673 Ivy Street,
Glendale, Calif

The Super Fischertherm Short Wave Diathermy Unit (Model 114-A) is recommended for medical and surgical use in the office or the hospital. It is housed in a walnut cabinet with vertical bakelite panel, there are aluminum ventilators in the top and back and wood ones in the sides. The chassis is of pressed steel. The subpanel is of wood with a galvanized iron shield on the lower side, high frequency insulation is porcelain, including tube sockets and coil supports. A large drawer occupies the lower part of the cabinet. The unit weighs approximately 180 pounds and is 39½ inches high by 31½ inches wide by 21½ inches deep. Standard equipment includes inductance cable, cuff and pad electrodes and surgical accessories for coagulation, desiccation and cutting purposes. Air spaced electrodes and supporting arms are optional.

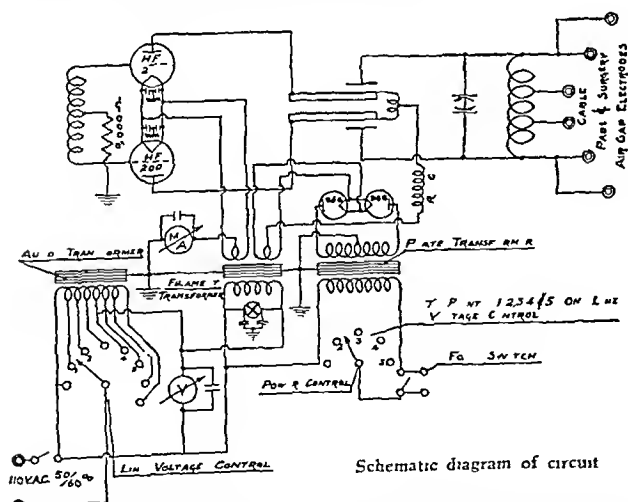


Super Fischertherm
(Model 114 A)

The circuit consists of two vacuum power tubes and two rectifier tubes in a simple arrangement. The output circuit is tuned by a split stator condenser. In adjusting for line voltage, an ohmite tap switch and a variable condenser resonance control are used.

The power input is approximately 1,300 watts. Since no reliable method for determining output power has been established, this value is not stated. The transformer temperature rise and the temperature rise at different levels within the cabinet were within the limits of safety prescribed by the Council. Burns may occur with this unit but are less likely than with conventional diathermy and may be avoided by the use of ordinary precautions.

A filter to prevent feed-back of radio frequency current into the power line is included in the equipment.



Schematic diagram of circuit

The firm submitted tests performed by a reliable investigator with regard to the heating ability of the unit when applied to the living human thigh. Eight tests were made with each of these techniques: air spaced disks, cuffs and inductance cable. Four healthy male medical students were used for the observations. Experiments were conducted on the left and right thighs alternately. Temperature measurements were made with thermocouples inserted into the anterior portion of the thigh

at depths of one-eighth inch, three-fourths inch and 2 inches or on the bone as measured from the skin straight in. The averages for the eight observations with each technique are given as follows:

Averages of eight observations, air-spaced disks

	Deep Muscle	Subcutaneous	Skin	Oral
Initial	100.2	99.2	96.0	98.8
Final	101.4	101.5	98.0	99.1

Averages of eight observations, cuff technique

	Deep Muscle	Subcutaneous	Skin	Oral
Initial	99.5	98.3	93.7	98.5
Final	102.8	103.3	100.3	99.1

Averages of eight observations, inductance cable technique

	Deep Muscle	Subcutaneous	Skin	Oral
Initial	99.6	98.6	93.7	98.7
Final	101.8	103.4	100.1	99.0

In applying the inductive cable, approximately 1 inch of bath towel was wrapped round the thigh and it was held in place by approximately four wraps of inductive cable. The position of the air-spaced electrodes was measured from the surface of the pads to the patient, from 2¼ to 3 inches. In addition to the spacing there is from one-sixteenth to one-eighth inch of rubber covering on the disk. The spacing of the two electrodes was made the same. The resulting temperature rises are higher than those achieved with a conventional diathermy tested at the same time.

The unit was tried out in a clinic acceptable to the Council and performed satisfactorily.

In view of the foregoing report, the Council voted to include the Super Fischertherm in its list of accepted devices.

Council on Pharmacy and Chemistry

REPORTS OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING
REPORT
PAUL NICHOLAS LEECH, Secretary

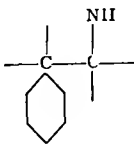
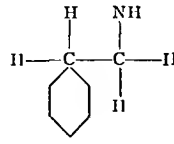
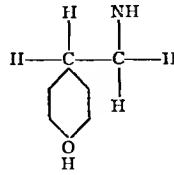
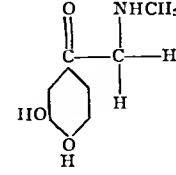
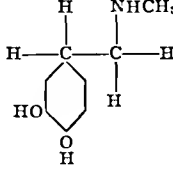
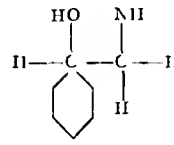
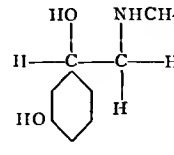
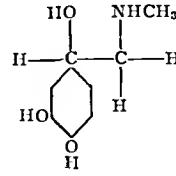
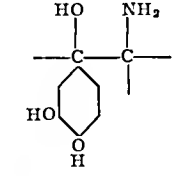
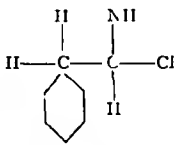
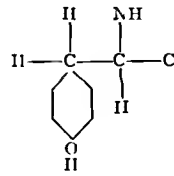
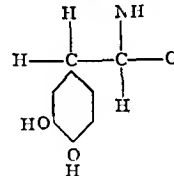
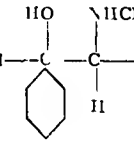
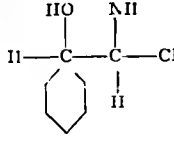
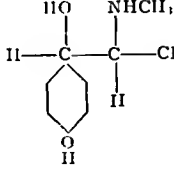
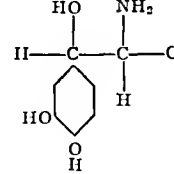
PRESENT STATUS OF BENZEDRINE SULFATE

The manufacturers of Benzedrine (Smith, Kline and French) have presented Benzedrine Sulfate and propose its use in various pathologic and substandard conditions of the central nervous system. Benzedrine, which stands accepted for New and Not Official Remedies, is the base, which readily changes to the carbonate on exposure to air (both are volatile) and is used by inhalation, whereas the sulfate is given orally. Review of the older as well as the newer pharmacologic and clinical data was required because of the great variety of conditions in which the sulfate was claimed to be useful.

EARLY PHARMACOLOGY

The experimental work with this drug consisted for the most part of the studies of the closely related phenylethanolamine (benzedrine is beta phenylisopropylamine) (see accompanying chart) and consideration must be given to this work. Allen¹ noted that Barger and Dale² had concluded that "the optimum carbon skeleton for sympathomimetic activity consists of a benzene ring with a side chain of two carbon atoms, the terminal one bearing the amino group" and that "another optimum condition is the presence of two phenolic hydroxyls in the 3,4 position relative to the side chain, when these are present an alcohol hydroxyl still further intensifies the activity." Chen and Meek³ found that tyramine and ephedrine had comparable physiologic activity, and that the work of Tainter

1 Allen G. A. The Comparative Physiological Action of Tyramine, Phenylethanolamine and Ephedrine. *J. Pharmacol. & Exper. Therap.* 72: 121 (Dec.) 1919.
2 Barger G. and Dale H. H. *J. Physiol.* 51: 19 (1919).
3 Chen K. H. and Meek W. J. A Comparative Study of Tyramine, Tyramine and Ephedrine with Special Reference to the Action of Tyramine. *J. Pharmacol. & Exper. Therap.* 28: 59 (July) 1927.

Phenylamino-	Phenylamino-	1,3-dihydroxyphenylamino-	3,4-dihydroxyphenylamino-		
					ETHANE
Primary configuration from Barger and Dale description	PHENYLETHYLAMINE α phenyl β amino ethane	TYRAMINE 4 hydroxy α phenyl β amino ethane	ALPHRINE 3,4-dihydroxy α phenyl β methylamino α keto ethane	EPINEPHINE 3,4-dihydroxy α phenyl β methylamino ethane	
					ETHANOL
	PHENYLETHANOLAMINE α phenyl β amino ethanol	NEOSYNEPHRIN 3 hydroxy α phenyl β methylamino ethanol	EPINEPHRINE 3,4-dihydroxy α phenyl β methylamino ethanol	Secondary configuration from Barger and Dale description	
					PROPANE
	BENZLDRINE α phenyl β amino propane	4 hydroxy α phenyl β amino propane	3,4-dihydroxy α phenyl β amino propane		
					PROPANOL
EPHEDRINE α phenyl β methylamino propanol	PROPADRIN (nor Ephedrine) α phenyl β amino propanol	SUPRIFEN 4 hydroxy α phenyl β methylamino propanol	COBEPRIN 3,4-dihydroxy α phenyl β amino propanol		

BENZEORINE AND RELATED COMPOUNDS

NOTE: This chart indicates the chemical but not the stereochemical relationship of the e compounds. *Kephrene* is included with the ethanes from which it differs only in that an oxygen replaces two hydrogens on the α carbon. A correct chemical name for the compound is 3,4 dihydroxy benzyl methylamino methane. *Synephrin* is not included but differs from *Neosynephrin* in having the phenolic hydroxy in the 4 instead of in the 3 position. *Benzeldrine*, *Ephedrine*, *Epinephrine*, *Kephrene*, *Neosynephrin* and *Propadrine* are Council accepted either in the form of the base and/or of a salt of the base.

and Churg,¹ and of De Eads and Butt² indicated that tyramine and ephedrine raise the blood pressure by a different mechanism than that of epinephrine.

Alles³ studied the structure of ephedrine on the basis of the Barger and Dale⁴ configuration and the work of Schultz⁵ and Tiffeneau.⁶ He noted that it would be deduced that ephedrine

would be less active than phenylethylamine but that actually the latter is considered to have one-fifth the activity of tyramine, which in turn is considered to be equivalent to ephedrine in circulatory effect. He believed that the discrepancy was at least partially due to the differences in the drugs' initial and final effects as demonstrated by Chen.⁸ Alles³ then undertook his study of phenylethanolamine.⁹ He found that it had a greater blood pressure effect in rabbits than phenylethylamine (initial effect greater and final effect comparable, resembling

⁴ Trautner, M. I. and Chang, D. K. The Antagonism of the Pressor Action of Tyramine by Cocaine. *J. Pharmacol. & Exper. Therap.* **30**: 19 (Jan.) 1927.

⁵ De Eads, F. and Butt, E. M. Further Evidences of the Non-sympathomimetic Action of Ephedrine. *Proc. Soc. Exper. Biol. & Med.* **24**: 500 (Nov.) 1927.

⁶ Schultz, W. H. *Bull.* **55**: 116, 117, U. S. P. H. S. 1909.
⁷ Tiffeneau, W. quoted from Guggenheim. *The Biogenic Amine* ed. 2, p. 310.

⁸ Chen, K. K. A Comparative Study of Ephedrine, Pseudo-Ephedrine and β-Phenylethylamine. *Arch. Int. Med.* **30**: 404 (March) 1927.
⁹ Phenylethylamine-Ethanol. First Prepared by Mannish, C. and Thiele, E. *Arch. Pharm.* **153**: 181 1915.

first epinephrine and then ephedrine), while its toxicity (subcutaneously in guinea-pigs) was found to be one-third that of ephedrine and one-fourth that of beta-phenylethanolamine. Tainter¹⁰ also studied the pharmacology of phenylethanolamine and concluded that it resembled tyramine and ephedrine more than epinephrine.

Miller and Piness¹¹ studied phenylethanolamine sulfate and concluded that it was comparable to ephedrine pharmacologically and was considerably less toxic. It was found to be inactive orally and to have an advantageously weak pressor effect but a disappointingly weak bronchodilator effect on injection.

Later Piness, Miller and Alles¹² studied the three related compounds—phenylethylamine, phenylmethylamine and phenylisopropylamine (benzedrine). Testing the substances on dogs, they found the latter to be the only one which caused a marked rise in blood pressure which lasted for over three hours.

Tainter¹³ believed that benzedrine would eventually prove superior to epinephrine and ephedrine and it is interesting to note that even at this time Alles¹⁴ pointed out that Tainter and Hanzlik (unpublished) had completed some work that indicated that the action of these compounds was more complicated than previously suspected.

Four isomeric phenylpropylamines were studied by Hartung and Munch¹⁵ in their series on amino alcohols. They noted that Chen, Wu and Henriksen¹⁶ and Piness, Miller and Alles¹² attributed the oral efficacy of ephedrine to the presence of the third carbon on the side chain and in accordance found the phenylpropanolamine was active by mouth, whereas phenylethanolamine was not. They concluded that the optimum skeleton for pressor compounds was beta-phenylethylamine, that a shift in the relative position of the phenyl and amino groups very greatly decreases pressor activity, that substitution of a methyl on either of the two carbons in the side chain of this skeleton confers oral activity, and that the presence of the secondary alcoholic hydroxyl in phenylpropylamine serves to decrease the toxicity to a degree that becomes significant therapeutically.

Tainter¹⁷ believed that the optimum configuration of molecules for pressor activity consists of the location of the amino and phenyl groups on adjacent carbon atoms and that the phenyl group must be on a terminal carbon. It is apparent that there is general agreement on the configuration which results in the pressor effects when these chemicals, including Benzedrine Sulfate, are administered orally.

RHINOLOGY

Miller and Piness¹¹ suggested that the greatest usefulness of phenylethanolamine would be in topical application to the nose. In the same issue of THE JOURNAL the Council published a brief statement¹⁸ noting that confirmatory reports were necessary before acceptance would be in order. Piness, Miller and Alles¹² tested it and benzedrine by mouth and subcutaneously in animals. They attributed the duration of the effect as well as the oral effect to the side chain methyl group.

Bertolet¹⁹ found benzedrine useful in 122 cases of nasal congestion. He did not refer to the previous work of Hartung and Munch¹⁵ and Piness, Miller and Alles¹². However, neither of them had used this drug by inhalation and Bertolet appears to have been the first to use it in this manner. It was supplied to him in a suitable device by the manufacturer. He considered it an advantageous addition to rhinologic materia

medica because it was safe, portable and an effective measure for use between office treatments. He believed that the contra-indications were negligible but that it should be used only as prescribed by, and under the direction of, the physician.

COUNCIL ACCEPTANCE

At this time the Council declared benzedrine accepted for inclusion in New and Nonofficial Remedies²⁰ as a vasoconstrictor for local application and inhalation in rhinology.

Following the publication of the Council report Byrne²¹ reported the use of benzedrine in the treatment of fifty or more cases of various types of rhinitis. In the vasomotor type he found that the amount of secretion was diminished, the itching and feeling of fullness relieved and decongestion accomplished. His results in cases of sinusitis were poor—the drug even aggravated the condition in some cases. He felt that care should be taken in prescribing it.

Wood²² used the drug in the treatment of diseases of the eustachian tube and the middle ear. He attached a pressure line and a nasal catheter to the benzedrine inhaler and described the advantage of vapor over liquids used in a similar manner for the treatment of these conditions.

Scarano²³ compared the rapidity of shrinkage and reactions following local application of ephedrine and benzedrine. He encountered no appreciable difference in shrinking effect and did not encounter burning, lacrimation and sneezing nearly as much with benzedrine as with ephedrine. Secondary reactions such as returgescence, atony and boggy nose were less severe and less frequent with benzedrine. The drug has enjoyed wide spread use and seems to be an effective, convenient agent for the purposes for which it was accepted, provided precautions are taken to avoid overdosage as recommended in New and Nonofficial Remedies and on the labels.

BENZEDRINE SULFATE

The sulfate, however, is recommended for oral use in a variety of clinical conditions. The Council is fully aware of the widespread publicity which has followed in the wake of the launching of this new form of benzedrine. Attention was called to certain abuses editorially in THE JOURNAL²⁴ as well as in the *British Medical Journal*²⁵ and the *Pharmaceutical Journal*. Apparently the firm has some qualms about the rather extensive use of the drug and has mailed to many physicians a letter which suggested some caution in its use.

The extensiveness of the claimed uses in this letter, as well as those suggested in the lay press, demands a rather thorough consideration of the pharmacologic and clinical studies which have been reported since the Council acceptance of benzedrine. The A. M. A. Chemical Laboratory has examined this brand of benzedrine sulfate and found it to be satisfactory.

LATER PHARMACOLOGY

The pharmacology of phenylisopropylamine was studied rather extensively by Detrick, Millikan, Modern and Thunes. They mentioned the early work of Hartung and Munch¹⁵ and noted that Pedden, Tainter and Cameron²⁶ and Cameron and Tainter²⁹ confirmed the actions of this drug on dogs.

- 10 Tainter M L The Pharmacological Actions of Phenylethanolamine Proc Soc Exper Biol & Med 25 275 (Jan) 1928
- 11 Miller Hyman and Piness George A Synthetic Substitute for Ephedrine J A M A 91 1033 (Oct 6) 1928
- 12 Piness George Miller Hyman and Alles G A Clinical Observations on Phenylaminoethanol Sulfate J A M A 94 790 (March 15) 1930
- 13 Tainter M L in discussion on Piness Miller and Alles
- 14 Alles G A in discussion on Piness Miller and Alles
- 15 Hartung W H and Munch J C Amino Alcohols VI The Preparation and Pharmacodynamic Activity of Four Isomeric Phenylpropylamines J Am Chem Soc 53 1875 1931
- 16 Chen K K Wu C K and Henriksen E Relation Between Pharmacological Action and Chemical Constitution and Configuration of Optical Isomers of Ephedrine Related Compound J Pharmacol & Exper Therap 36 363 (July) 1929
- 17 Tainter M L Comparative Actions of Sympathomimetic Compounds Phenyl and Substituted Phenyl Derivatives An Phenyl Ring Compounds and Aliphatic Amino Acids Internat J Pharmacodyn et de Therap 46 192 (Oct 15) 1931
- 18 Phenylaminoethanol Sulfate J A M A 91 1033 (Oct 6) 1928
- 19 Bertolet J A Benzyl Methyl Carbinamine Carlen et al M J & P 136 5 (July 20) 1937
- 20 Benzedrine J A M A 101 1315 (Oct 21) 1933
- 21 Byrne H V The Use of Benzyl Methyl Carbinamine Carlen et al in the Treatment of Rhinitis New England J Med 209 1048 (Nov 23) 1933
- 22 Wood E L A New Drug for the Treatment of Eustachian Tube and Middle Ear Arch Otolaryng 21 588 (May) 1935
- 23 Scarano J A Rapidity of Shrinkage and Immediate and Secondary Reactions Following Local Applications of Ephedrine Benzedrine M Rec 140 602 (Dec 5) 1934
- 24 Benzedrine Sulfate Pep Pills editorial J A M A 105 193 (June 5) 1937
- 25 Guttman Erich and Sargent William Observations on Benzedrine Brit M J 1 1013 (May 15) 1937
- 26 The Concidence Drug Pharmacological J 138 339 (May) 1937
- 27 Detrick L F Millikan Ralph Modern F S and Thunes C H On the Pharmacology of Phenylisopropylamine (I) J Pharmacol & Exper Therap 60 36 (May) 1934
- 28 Pedden J R Tainter M L and Cameron W M Comparative Actions of Sympathomimetic Compounds I Bronchodilator Actions Experimental Bronchial Spasm of Parasympathetic Origin J Pharmacol & Exper Therap 55 232 (Nov) 1935
- 29 Cameron W M and Tainter M L Comparative Actions of Sympathomimetic Compounds II Bronchodilator Actions in Spasm Induced by Histamine J Pharmacol & Exper Therap 55 1 (June) 1936

described by Alles³⁰ and Alles and Prinzmetal³¹. They referred to their own previous studies (Patek and Thienes³² and Thienes³³) and continued the study of the effects of this drug in dogs, cats and rabbits. Their study consisted principally of effects of combinations of benzedrine with other drugs. They believed that benzedrine was proved to be a central nervous system stimulant in anesthetized animals because of the increase in rate and depth of respirations, as well as the struggling and vocalizations observed in their experimental animals. They described a pressor action in all the animals and noted that tachyphylaxis was marked. It was observed that the pressor effect was moderately decreased by cocaine and ergotamine. In low concentrations (10⁻⁶ or less) benzedrine salts had no effect on excised smooth muscle of rabbits or guinea-pigs and inhibited the intestine of the cat. In high concentrations (10⁻⁴ or higher) benzedrine caused contraction of all smooth muscle, although a temporary inhibition of cat ileum and duodenum preceded the contraction produced by the benzedrine. This inhibition was prevented by atropine and decreased by nicotine, while the contraction itself was not altered by atropine but was decreased by nicotine. No effect of atropine or nicotine was noted in the responses of rabbit tissues to benzedrine but the contraction of the guinea-pig intestine was abolished by atropine. Ergotamine abolished epinephrine action on cat duodenum but merely decreased the action of benzedrine. Hydrastine decreased or abolished the actions of epinephrine and of benzedrine while yohimbine contracted the intestine but caused negligible alteration of the actions of epinephrine and benzedrine.

Myerson, Loman and Dameshek³⁴ studied the hematologic properties of benzedrine sulfate and claimed an increase (following the oral administration of therapeutic doses) in red blood cell counts of 1½ to 3 million with doubling, tripling and quadrupling of the leukocyte counts. Recently Simpson³⁵ has attributed this as with other vasoconstrictors to "the extrusion into the circulation" of these cells "from the storage and hematopoietic centers, including the bone marrow." There was no increase in hemoglobin or immature white cells (except for an occasional increase in neutrophils). Myerson and his associates³¹ also studied the basal metabolic rate and found no change following its use. Lagen, Solev and Leake³⁶ however, found individual variations which indicate that further study is necessary before it can be said that the drug is without effect on the rate. Peoples and Guttmann³⁷ did not find any change in the blood sugar levels following the clinical use of this drug. Myerson and his associates³⁴ also studied the blood sugar levels. They did not encounter change in the size of the pupil or symptomatic change in the gastro-intestinal, respiratory or genito urinary functions.

Pressor Effects—Alles³⁰ found that benzedrine was equal in pressor effect to beta phenylethylamine when injected intravenously in dogs under barbitol anesthesia and that it had a much weaker but longer effect than epinephrine. Similar results were obtained with 4 hydroxy- and 3,4 dihydroxy-phenylisopropylamine (4 hydroxy- and 3,4 dihydroxy α -phenyl β amino propane—see chart) and phenylethylamine. The most prolonged effect and the nearest to epinephrine in initial effect was produced by 3,4 dihydroxy phenylisopropylamine. The propylamines were found to be much more toxic than the ethylamines but this toxicity was lessened by the introduction of the

hydroxy groups to the compounds. Nathanson³⁸ has experimented with 4 hydroxy phenyl isopropylamine (supplied by the makers of benzedrine) and found it effective in the prevention of cardiac arrest without central nervous stimulation or unpleasant side effects.

Tainter¹⁷ made a very extensive examination of forty-four sympathomimetic amines. He noted that Piness, Miller and Alles¹² and later Alles³⁰ reported that benzedrine maintained blood pressure at a high level after subcutaneous or oral administration in man and that Hartung and Munch¹⁵ had obtained comparable effects in dogs by injection. Tainter¹⁷ considered the pressor activity of benzedrine high and regular enough to attempt the determination of the possible mechanism. However, he found that he could not employ the usual procedures because the second injection of the drug caused a fall of blood pressure. He avoided this effect by injection of cocaine or ergotamine before administration and then compared responses with those of the controls. He determined that when the epinephrine response was doubled by cocaine the pressor response to this propylamine was abolished and that when the epinephrine response was reversed by ergotamine this compound still gave a good rise of blood pressure.

Many of those who have studied benzedrine clinically have noted its pressor effects. In this connection it is necessary to consider some of the symptomatic and pressor effects of epinephrine. Loman and Myerson³⁰ noted that epinephrine causes a rise in the intracranial pressure together with a rise of arterial and internal jugular venous pressures and attributed the former to the arterial rise, since there was a vasoconstriction of the cerebral blood vessels. Gibbs, Gibbs and Lennox⁴⁰ noted that the cutaneous injection of amounts of epinephrine sufficient to cause a marked rise in blood pressure caused a great increase in cerebral blood flow, this increase undoubtedly being secondary to increase in blood pressure. Minute amounts of epinephrine caused a slight rise in flow without change (or with a fall) in blood pressure suggesting a vasodilator action. Sulman⁴¹ claimed similar pressor and depressor responses in his clinical studies of the inhalation of benzedrine. Anderson and Scott⁴² reported both increases and decreases in pulse rate and blood pressure in a series of six cases. Myerson and his associates⁴³ observed the pressor effects of benzedrine given orally, subcutaneously and intravenously in a special but unusually well controlled series of cases. Most of them were "passive unemotional cases of dementia praecox who lay perfectly quiet throughout the entire procedure." In eighteen cases from 9 to 50 mg of the drug was administered subcutaneously and resulted in gradual rises of from 10 to 54 mm of mercury—reaching a maximum in from eleven to eighty-five minutes and returning to normal in from one and one-half to eight hours. During this period the pulse rate was diminished from 4 to 25 beats per minute in twelve cases unchanged in four and increased in two. Fourteen patients were then given 40 mg of benzedrine sulfate by mouth and registered increases of from 8 to 68 mm of mercury in systolic pressure. The effect was slower than with the subcutaneous administration and the pulse rate was more consistently lowered. The authors administered from 20 to 40 mg subcutaneously, followed it with from 20 to 30 mg of acetyl-beta-methyl choline and the effect of the benzedrine was more than counteracted for the period of activity of the choline (from ten to twenty minutes), after which the effects of benzedrine supervened. Further experiments indicated that atropine enhanced the pressor effect of

30 Alles G A. The Comparative Physiological Actions of dl β phenylisopropylamines. I. Pressor Effect and Toxicity. *J Pharmacol & Exper Therap* 47 339 (March) 1933

31 Alles G A and Prinzmetal Myron. Comparative Physiological Actions of dl β phenylisopropylamines. Bronchial Effect. *J Pharmacol & Exper Therap* 48 161 (June) 1933

32 Patek P and Thienes C H. Smooth Muscle Actions of Epinephrine Substitutes. Primary Phenylalkylamines. *Arch internat de pharmacodyn et de therap* 47 241 (March) 1934

33 Thienes C H. *Proc Soc Exper Biol & Med* 26 501 1929

34 Myerson Abraham, Loman Julius and Dameshek William. Physiologic Effects of Benzedrine and Its Relationship to Other Drugs Affecting the Autonomic Nervous System. *Am J M Sc* 192 560 (Oct) 1936

35 Simon S I. Correspondence. *Brit M J* 1 93 (Jan 9) 1937

36 Lagen J B, Solev Mayo H and Leake T B. The Effect of Benzedrine on the Basal Metabolic Rate. *Proc Soc Exper Biol & Med* 35 2 6 (Nov) 1936

37 Peoples S A and Guttmann E. Hypertension Produced with Benzedrine. Its Psychological Accompaniment. *Lancet* 1 1107 (May 16) 1936

38 Nathanson M H. Action of Para Hydroxy Phenyl Iso Propyl amine on Induced Cardiac Stand still. *Proc Soc Exper Biol & Med* 35 627 (Jan) 1937

39 Loman Julius and Myerson Abraham. Action of Certain Drugs on Cerebrospinal Fluid and on the Internal Jugular Venous and Systemic Arterial Pressures of Man. *Arch Neurol & Psychiat* 27 1126 (May) 1932

40 Gibbs F A, Gibbs E L and Lennox W G. The Cerebral Blood Flow in Man as Influenced by Adrenalin, Caffeine, Amyl Nitrite and Histamine. *Am Heart J* 10 916 (Oct) 1935

41 Sulman L D. Certain Conditions in Which Volatile Vasoconstrictor Has Proved of Particular Value—Preliminary Report. *M Times & Long Island M J* (now called *M Times*) 63 374 (Dec) 1935

42 Anderson E W and Scott W C M. The Cardiovascular Effects of Benzedrine. *Lancet* 2 1461 (Dec 19) 1936

43 Myer on Abraham, Loman Julius and Dameshek William. Physiologic Effects of Acetyl Beta Methyl Choline (Necholyl) and Its Relationship to Other Drugs Affecting the Autonomic Nervous System. *Am J M Sc* 193 198 (Feb) 1937. Footnote 34

benzedrine and that amital counteracted the pressor effect when given either before or after the benzedrine. Peoples and Guttman³⁷ described increases of systolic pressures lasting from two to four and occasionally to twenty-four hours. This increase was found to be greatest in those with hypotension and there was generally an increase in pulse rate which lasted longer than the blood pressure rise. That clinical results are dependent on this effect is apparently disputed by the finding that pressor effects occurred without results and therapeutic results occurred without pressor effects. However, it has been suggested that there is a definite relationship, although it is not apparent in every case. Guttman⁴⁴ noted that the drug was suitable for experimental alterations of blood pressure because its pressor effect was between that of epinephrine and ephedrine as to the rapidity and intensity of action.

NARCOLEPSY

Uhlrich, Trapp and Vidgoff⁴⁰ discussed the use of the drug in narcolepsy and noted the many varied but unproved theories of the etiology of this condition. It is usually considered to be chronic and incurable, but spontaneous recovery without treatment has been reported. Remedies which have been used to relieve the condition include psychotherapy, endocrine medication (thyroid, pituitary) and caffeine⁴¹. The only remedy which has proved successful to any appreciable degree was ephedrine sulfate, which was first used by Janota⁴².

Uhlrich and his co-workers⁴⁰ encountered sleeplessness in a patient given benzedrine inhalations and experimented with it in cases of narcolepsy without success. It was not until Prinzmetal and Bloomberg⁴³ published their report of its oral use in this condition that they reinstituted their study. Prinzmetal and Bloomberg⁴³ studied nine cases of narcolepsy, in which complete relief from attacks of sleep and practically complete relief from cataplexy was obtained. They considered it three times as effective as ephedrine in preventing attacks of sleep and noted its efficacy in cases that did not respond at all to ephedrine. A footnote referred to four other successful but less carefully studied cases. The authors did not consider the possible pressor effects of the drug.

Uhlrich and his co-workers⁴⁰ used it orally in six cases with consistently good results. They suggested that the difference between the oral and inhalation effects of this drug might be largely a matter of dosage. Peoples and Guttman³⁷ confirmed the insomnia-producing effects noted by these workers in treating cases of narcolepsy. (An additional reference to its use in narcolepsy⁴⁴ has appeared since the report was formulated.)

MENTAL EFFECTS MOOD AND FATIGUE

Peoples and Guttman³⁷ described the following effects in a group of twenty-five institutionalized patients: "feeling of confidence, elation and well being; happier, brighter, more energetic and free from care and worry." Myerson and Ritvo⁴⁹ described "a definite feeling of well being" and later Myerson⁵⁰ studied its effect on mood and fatigue in normal and neurotic persons. He described the following results, yet noted that a thorough study of the effects had not been made. Normal non-psychiatric and non-neurotic persons suffering from fatigue and light malaise due to insufficient rest received immediate benefit and relief of a pressor type. He suggested that as an emergency measure the drug was probably of benefit to normal persons. He studied it in certain cases of narcosis associated with depression, fatigue, anhedonia and many states of psychoses of this type. He stated that the ameliorating effect

was neither permanent nor curative, but he noted that it helped to combat morning apathy and depression.

Nathanson⁵¹ noted amelioration of fatigue in 80 per cent of his cases of exhaustion and lessening of migraine in four cases in which this condition was associated with attacks of weakness. He described "a sense of increased energy and capacity for work" in more than half the cases. In addition, a feeling of exhilaration and sense of well being was a consistent effect and "patients volunteered that there had been a definite increase in mental activity and efficiency." He also described similar effects of a so-called pick me up nature in fifty-five normal individuals. It must be considered, however, that the results are purely subjective and information received by the Council indicates that this use is ill advised.

Guttman⁴⁴ noted the stimulating and euphorizing effect on normal persons with similar results in depressive patients. He described two groups—one with an initial stage of mild intoxication followed by mild elation similar to that which the second group encountered without the prodromal dizziness or giddiness. Thus he interpreted to indicate influence on the mood and on the psychomotor retardation. These effects could not be entirely correlated with the pressor effect, since they occurred even when a depressor effect ensued, but he believed there was a close relationship. Guttman⁴⁴ also suggested a possible interrelationship between the effect on mood and the effect on sleep.

GASTRO-INTESTINAL EFFECTS

Myerson and Ritvo⁴⁹ described the effect of this drug on spasm of the gastro-intestinal tract. They found that it was of value in diminishing or abolishing the spasm when due to whatever cause such as unpleasant emotion, organic disease of the gastro-intestinal tract and reflex spasm (spastic colitis and pylorospasm) due to disease elsewhere in the body. It was found that the drug facilitated x-ray study of the gastro-intestinal tract and was useful in differentiating functional and organic spasm. Later Ritvo⁵² noted that, when given orally or by injection, the drug is sympathomimetic in character and that results of its use include relaxation of the spasm of stomach, pylorus and intestine. This permits better roentgenographic study of the stomach and duodenum. The tone of the stomach is lessened, but peristalsis is diminished only slightly. The colon becomes widened, the haustrations diminish in number and depth, and spastic deformities of the bowel disappear. The patient is able to retain the opaque enema with less discomfort.

OTHER CLINICAL USES

A preliminary report of the use of benzedrine in the control of blood pressure during spinal anesthesia has been issued by the Mayo Clinic⁵³. In a series of twenty-six cases involving operation on the urinary tract, benzedrine was given by inhalation. There was a resultant mild pressor action in twenty-three cases. It was necessary to give the drug before the decrease in blood pressure became alarming because of the lag between administration and pressor effect.

Its effect on intelligence scores (Cattell test) in certain institutionalized patients has been studied by Sargent and Blackburn⁵⁴. The results show some increase in score. The author felt that the drug had more effect on those suffering from pure emotional upsets than on the schizophrenic.

DOSAGE

The dosages used in the experimental and the early clinical work were as follows:

Prinzmetal and Bloomberg⁴³ used from 10 to 40 mg. Uhlrich and his co-workers⁴⁰ from 20 to 50. Peoples and Guttman³⁷ from 10 to 80. Myerson and Ritvo⁴⁹ from 10 to 40. Myerson⁵⁰ from 5 to 20 and Pines, Miller and Alkes⁵¹ 10 mg. Nathanson⁵¹ used from 10 to 20 mg. in the morning.

⁴⁴ Guttman E. Effect of Benzedrine on Depressive States. *J. Ment. Dis.* 82: 418 (Sept. 1936).
⁴⁰ Uhlrich H., Trapp C. F., and Vidgoff A. *Benzedrine Sulfate*. *Med.* 9: 1213 (Feb. 20).
⁴³ Prinzmetal and Bloomberg. *Pathologischen* 5 (Feb. 20).
⁴⁹ Myerson and Ritvo. *Use of Benzedrine*. *Proc. Staff Meet., Mayo Clinic* 10: 2031 (Dec. 1936).
⁵¹ Nathanson M. H. The Central Action of Beta Amylase (Benzedrine) Sulfate. *J. A. M. A.* 108: 528 (Feb. 13) 1936.
⁵² Ritvo Max. Drugs as an Aid in Roentgen Examination of the Gastro-Intestinal Tract. *Am. J. Roentgenol.* 36: 478 (Dec. 1936).
⁵³ Control of Blood Pressure During Spinal Anesthesia. *Mayo Clinic Report on the Use of Benzedrine*. *Proc. Staff Meet., Mayo Clinic* 10: 2031 (Sept. 9) 1936.
⁵⁴ Sargent W. and Blackburn J. M. The Effect of Benzedrine on Intelligence Score. *Lancet* 2: 1345 (Dec. 12) 1936.

the treatment of exhaustion. Subsequent evidence indicates that there is considerable variability in the response of individual patients. It is advisable, therefore, to institute treatment with from 25 mg to 10 mg and increase this dosage up to not more than 20 mg three times a day, depending on the necessity of increasing the dosage to obtain a therapeutic response.

REACTIONS AND CONTRAINDICATIONS

Doses which caused reactions were usually those which were greater than the amount necessary to produce therapeutic effects.

A correspondence item in THE JOURNAL⁴⁹ suggested that continued administration may result in a pressor effect. Sleeplessness has been encountered with the overdosage with the inhaler and the solution.

Overdosage and sometimes therapeutically effective doses of benzedrine sulfate have resulted in many reactions. Prinzmetal and Bloomberg⁴⁷ encountered insomnia, hyperexcitability (overstimulation of the central nervous system with dilated pupils and inability to relax). Uhlrich and his co-workers⁴⁸ encountered nausea, anorexia, and in one case an extramenstrual period. Myerson and Rivot⁴⁹ encountered unpleasant effects in 2 per cent of their 200 patients including chills, nausea, restlessness and diarrhea, all within several hours after administration. Myerson⁵⁰ noted the restlessness and sleeplessness resulting from the administration of the drug orally in the afternoon.

Nathanson⁵¹ described a tendency to loquaciousness. Ten patients noted a marked loss of appetite and definite reduction in weight. Occasionally secondary depression followed initial stimulation. Dryness of the mouth, disturbed sleep, transitory tremor of the hands, sweating and palpitation—usually of short duration—were noted. The drug was discontinued in three cases because of sleeplessness (in two) and severe palpitation (one). He did not encounter a rise in arterial pressure; he found no extrasystoles except in one case, four patients having extrasystoles showed no additional cardiac effect from the drug. He goes so far as to point out that the use of the drug may lead to harmful results in that patients may overdo without receiving the warning of fatigue. He also recommends administration under the physician's prescription only. He notes that complete indications and contraindications are not yet available.

Apparently there is no tolerance, as response has been found to be the same after fourteen months' use in one case and after shorter periods in other cases. Wilbur, MacLean and Allen⁵² noted that in their opinion the drug should not be used continuously unless the patient is less than 60 years of age, has no evidence of cardiovascular disease and can be closely watched. Others have suggested that cumulative effects may be deleterious. Anderson and Scott⁴² noting no record of severe cardiovascular effects produced by benzedrine reported an unusual case in which the patient went into collapse after 30 mg of benzedrine. They recommended that until more precise knowledge of the cardiologic effects of benzedrine is obtained caution should be exercised in the administration of doses of from 10 to 20 mg or more, particularly in elderly subjects.

SUMMARY

After consideration of the available evidence the Council declared that the permissible claims for the usefulness of Benzedrine Sulfate should not exceed the following stipulations:

Narcolepsy.—Benzedrine Sulfate is useful for the treatment of narcolepsy and for controlling symptoms similar to those of narcolepsy in the treatment of postencephalitic parkinsonism. Its use is not recommended in the treatment of sleepiness and fatigue in normal individuals because of the possible danger of pressor effects from continued use, the dangers of eliminating the warning signal of sleepiness in individuals who are overdoing because of the possibility of habit formation or addiction from such use and because cases of collapse have ensued when the drug has been used for this purpose.

Mental Effects: Mood and Fatigue.—Benzedrine Sulfate is useful in the treatment of certain depressive psychopathic con-

ditions. Its use is not recommended for developing a sense of increased energy or capacity for work, or a feeling of exhilaration or as a 'pick-me up' in individuals other than those under the strict supervision of the physician. The Council believes that its use for these purposes should be confined to institutions since the dangers involved in the use of the drug for this purpose in those going about their daily tasks are similar to the dangers mentioned in connection with fighting off sleep.

Gastro-Intestinal Effects.—Benzedrine Sulfate is useful in facilitating roentgenographic study of the gastro-intestinal tract but it is not recommended at present for use in the treatment of spastic colitis and pylorus spasm.

Other Clinical Uses.—Further evidence is necessary before serious consideration can be given to these various other applications of this agent to therapeutics.

Reactions and Contraindications.—The very nature of the therapeutic effects as well as side actions of this drug requires that its use be promoted with proper cautionary statements as to pressor effect, hyperexcitability, gastro-intestinal disturbance, restlessness and sleeplessness and in overdosage, chills, collapse and syncope. It should also be carefully noted that the drug is contraindicated in those having cardiovascular disease, especially when hypertension is a sequence of that disease.

Dosage.—The use of the drug should be instituted with a dose of 25 mg to 10 mg, and it is recommended that no single dose exceed 20 mg. In certain conditions it may be necessary to repeat the use of the drug two or three times daily. It is preferable, if possible, to administer the effective quantity during the morning.

CONCLUSION

The Council declared that Benzedrine Sulfate (Smith, Kline & French) and the submitted dosage form would be accepted for inclusion in N N R provided the firm agrees to limit the claims for the usefulness of the drug to the treatment of narcolepsy and postencephalitic parkinsonism, to limit the claims for its usefulness in depressive mental states to the stipulations of this report, and further, provided there are no other conflicts with the rules.

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

PALL NICHOLAS LEECH, Secretary

CALCIUM GLUCONATE (See New and Nonofficial Remedies 1937, p 150)

Calcium Gluconate Effervescent Flint. Each gram contains calcium gluconate U S P 0.5 Gm, citric acid 0.25 Gm, and sodium bicarbonate 0.25 Gm.

Dosage.—Orally, for adults 10 Gm (150 grains) three times a day; for children 4 Gm (60 grains) three times a day.

Manufactured by Flint, Eaton & Co., Decatur, Ill. U S patent 1,983,954. No U S trademark.

Calcium gluconate effervescent occurs as a white, coarsely granular, odorless material with a biting acid taste. Its solubility in water is not less than 28 Gm per hundred cubic centimeters at 25°C. The resulting solution is acid to litmus. The loss in weight over sulfuric acid is not greater than 0.5 per cent. The product conforms to tests for purity of calcium gluconate U S P. The calcium oxide content is not less than 6.0 per cent nor more than 6.4 per cent.

Dissolve approximately 5 Gm of calcium gluconate effervescent accurately weighed in water to make 100 cc of solution. Transfer a 25 cc portion to a 250 cc beaker, boil for two minutes and while boiling add 25 cc of a hot saturated solution of calcium hydroxide and continue boiling for five minutes. Digest on the steam bath for two hours and filter while hot through a hot Gooch crucible, wash the residue with boiling water and dry to constant weight at 100°C. The citric acid content is not less than 24.5 per cent nor more than 25.8 per cent. Dissolve approximately 10 Gm of calcium gluconate effervescent accurately weighed in water to make 100 cc of solution. Transfer a 25 cc portion to a suitable Erlenmeyer flask, boil for two minutes, cool and titrate with tenth normal sodium hydroxide using phenolphthalein as an indicator. A 1 Gm sample requires not less than 7 cc nor more than 7.6 cc of tenth normal sodium hydroxide. Transfer about 0.1 Gm of calcium gluconate effervescent accurately weighed to a 120 cc beaker and dissolve in 5 cc of distilled water, cool the beaker and contents in ice water and add 25 cc of a 15 per cent magnesium uranyl acetate solution. Place the mixture in an ice bath at 20°C and allow to stand for twenty-four hours. Filter with suction and wash with 95 per cent alcohol saturated with sodium magnesium uranyl acetate. Dry the precipitate at 110°C for thirty minutes, cool and weigh. One Gm of sodium magnesium uranyl acetate being equivalent to 0.0153 Gm of sodium, the sodium content is not less than 6.4 per cent nor more than 7.0 per cent.

55 Norc Withrow. Effects of Benzedrine on Blood Pressure. Correspondence J A M A 107 1582 (Nov 7) 1936.

56 Wilbur, D L, MacLean, A R and Allen, E A. Clinical Observations on the Effect of Benzedrine Sulfate. Proc Staff Meet Mayo Clin 12: 97 (Sept 17) 1937.

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SATURDAY, DECEMBER 18, 1937

ESSENTIAL AMINO ACIDS IN NUTRITION

Of the twenty-two amino acids commonly obtained by the hydrolysis of proteins, ten are now known to be essential for growth and twelve are considered nonessential. Such is the brief announcement¹ that provides the concluding chapter to a series of brilliant researches conducted at the University of Illinois for more than the last decade but having their origin earlier in the contributions of Osborne and Mendel. The latter workers showed more than twenty years ago that proteins differed in their nutritional value. Animals could not grow when restricted to a diet in which the sole source of protein was zein or gliadin, the alcohol soluble proteins of corn and wheat respectively. Zein is a peculiar protein in that it contains neither tryptophan nor lysine, and gliadin contains only small amounts of lysine. The addition of the amino acids in which each of these proteins is deficient promoted normal growth and it was concluded that tryptophan and lysine must be furnished by the diet in order that growth might occur. Evidence was also obtained to show that uronic acid, it needed by the body for growth, can be formed from other sources and therefore need not be included in the diet. Proteins accordingly could be divided into complete and incomplete proteins depending on whether they provided all the indispensable amino acids or were deficient in one or more of these. This method of study was hampered by the relatively few proteins that had been isolated in pure form and were adaptable for feeding experiments.

The next advance in the study of the nutritive value of the individual amino acids came as a result of the

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are destroyed during the treatment. From the mixture of amino acids that comprise a hydrolyzed protein, groups of amino acids would be removed and other added. By this technique it was found that histidine is another amino acid which is essential for growth. The limitation to this method of procedure was the difficulty of chemically separating the amino acids.

The obvious possibility of feeding mixtures of pure amino acids remained an unattainable goal until Rose and his collaborators at the University of Illinois began an extensive program of preparing and accumulating all the known amino acids in quantities sufficient to permit feeding mixtures of them to rats. Numerous difficulties were encountered along the way but one by one they were successfully overcome. Then it was learned that the feeding of all the known amino acids, including methionine which had been discovered by Mueller in 1922, failed to promote growth. The addition to the diet of a small amount of protein insufficient in itself to promote growth, gave good results. The bold prediction was made that in proteins there must be some amino acid which at that time had not been discovered, that this unknown amino acid was indispensable for growth and that it was present in some proteins in higher concentration than in others. An intensive study was begun at once to learn the nature of the hypothetical amino acid which had eluded the attention of all other investigators in the field of protein chemistry. Various proteins were hydrolyzed and fractionated by different chemical means, and the fractions tested for their growth promoting properties when added to mixtures of amino acids, eventually, from a potent fraction, the amino acid itself was isolated. Further work led to its identification as one of the four possible alpha-amino-beta-hydroxybutyric acids. To the naturally occurring form of this indispensable amino acid its discoverers have given the name threonine.

Having thus obtained a knowledge of all the amino acids in ordinary proteins, Rose and his collaborators were able to continue their experiments with the hope of attaining a successful solution to the problem of the nutritional importance of each amino acid. When all the amino acids were fed, including threonine, good growth was obtained. Individual amino acids were omitted from this mixture and the effect on the growth of the animals was observed. The denouement of the story thus developed rapidly. The twenty-two common amino acids now can be classified precisely according to their growth effects. Among the essential amino acids are lysine, tryptophan, histidine, phenylalanine, leucine, isoleucine, threonine, methionine and valine. Arginine, which at one time was thought to be non-essential, should also be classified as an essential amino acid because the animal body cannot synthesize this substance at a rate fast enough to permit normal growth. The nonessential amino acids are alanine, acetic acid, alanine, serine, norleucine, gamma-aminobutyric acid, and aspartic acid.

glutamic acid, hydroxyglutamic acid, proline, hydroxyproline, citrulline, tyrosine and cystine. For many years cystine was thought to be an essential amino acid. Later work has made clear that the other sulfur-containing amino acid of proteins, methionine, is essential for growth but that cystine is not. However, if the amount of methionine in the diet was not sufficient to permit normal growth, it was observed that the addition of small amounts of cystine would accelerate growth. It has been suggested that methionine forms some substance which also can be formed from cystine and that this derivative is necessary in order that growth can occur. To a limited extent, therefore, cystine can replace a portion of the methionine in the diet.

This work on the nutritional significance of the amino acids has come to fruition so rapidly that it is difficult to grasp all the possibilities that the future portends. It has been suggested that a method might be developed for the study of the origin of each of the dispensable amino acids and of the chemical conversions involved in their formation. The amino acids obtained from foods are utilized by the body for the formation of the proteins of the blood and tissues and for the production of some of the hormones and other substances that contain nitrogen. The chemical changes that take place in the body are exceedingly important in health and in disease, and work of the kind reported by the Illinois investigators will lead eventually to a firmer understanding of some of the numerous transformations undergone by the important nitrogenous components of the body.

GRADUATE INSTRUCTION IN SYPHILIS CONTROL WORK

The Advisory Committee to the U. S. Public Health Service which outlined a venereal disease control program for state and local health departments¹ agreed on the importance of the postgraduate instruction of practicing physicians in the clinical management and public health control of syphilis and gonorrhea. Two types of training are to be fostered, the short review course in current diagnostic and therapeutic practice and prolonged intensive training in venereology for the specialist.

Because of the need for the assistance and cooperation of the physician in private practice with the health department, the U. S. Public Health Service has made a special attempt to provide postgraduate training for physicians in the fundamentals of the clinical management and public health control of syphilis, gonorrhea and the other venereal diseases. Special allotments of funds, appropriated under the provisions of the Social Security Act, have been made to a number of states.

Special allotments have been made to the state health officers of California, Massachusetts, New York, Ohio

and Tennessee for the development of a special postgraduate course in venereal disease control work. Under this plan the course of postgraduate training is organized by the state health officer and the authorities in the medical school that is selected. The training is intended primarily for health officers and for private physicians who cooperate with state and local departments of health. Applicants to be eligible for training must be nominated by the state health officer of the state from which they come. Except for nominal registration fees in one or two medical schools, the training is provided without charge. It is hoped that the medical schools which have been selected will serve health officers and physicians from all the states which are conveniently located in that part of the country.

More than a year ago a special course of training in syphilis control work was developed in the Johns Hopkins University School of Medicine with funds allotted by the Public Health Service to the Maryland State Department of Health. Shortly thereafter a course of training was developed through the utilization of Social Security funds by the Pennsylvania State Department of Health in cooperation with the University of Pennsylvania. The latter course is for the purpose of training physicians, public health nurses and medical social workers in case finding and case holding methods as they pertain to the control of the venereal diseases.

For the Negro physician a special allotment has been made to the District of Columbia Health Department and a course has been developed at Howard University. Negro physicians nominated by state health officers are eligible for this postgraduate training at very small cost.

The magnitude of the venereal disease problem in this country is such as to require the full cooperation of the medical profession if success is to be attained. The short review courses recently organized, in which the modern clinical management of the venereal diseases is taught, will not qualify the physician in general practice as a finished specialist. Present facilities for the training of specialists are not available to provide entirely for the care of the large number of patients infected with syphilis and gonorrhea who now require medical attention. However, there is no reason why the physician in general practice should not treat the average patient with early and latent syphilis unless special complications develop, which indicate the need for consultation with an expert. To be able to take on this new duty, however, it is essential that the general practitioner know the fundamentals of the management of syphilis and be aided by his health department. Every health officer and every physician interested in the control of syphilis and gonorrhea should see that those who diagnose and treat these diseases know the basic principles. The postgraduate courses of training that have been developed should be utilized to their fullest extent.

1. Recommendations for a Venereal Disease Control Program in State and Local Health Departments. Report of an Advisory Committee to the United States Public Health Service. Ven. Dis. Inform. 17:1 (Jan.) 1936.

THE CHANGE OF PROTEIN TO CARBOHYDRATE

Claude Bernard's discovery in 1848 of glycogen in the liver had far reaching significance. Not only had he demonstrated a "nouvelle fonction du foie" but through the experimental approach employed he opened a question of fundamental significance in intermediary metabolism, he offered convincing evidence of the transformation of protein to carbohydrate in the animal organism. Soon after the announcement of this new function of the liver, somewhat similar cogent evidence of the change of carbohydrate to fat was developed by Lawes and Gilbert. The fundamental nature of protein metabolism compelled investigators in this field to consider seriously the extent of the metabolic transformation of protein to sugar. Aminoacetic acid was shown to increase the hepatic glycogen in fasting rabbits. Studies on diabetic patients showed that some two thirds of the meat and gelatin fed appeared as urinary sugar. Later it was demonstrated that aminoacetic acid, alanine and asparagin were changed to sugar in the depancreatized dog. The subject was greatly extended by Graham Lusk, who used phlorrhizinated dogs as experimental subjects. Largely on the basis of his studies the then known amino acids were divided into the glycogenic and nonglycogenic amino acids. From the foregoing investigations as well as others employing as criteria the change in respiratory quotient and the antagonism to insulin hypoglycemia, the current view accepts aminoacetic acid, alanine, serine, aspartic acid, glutamic acid, cystine, methionine, proline and arginine as glycogenic amino acids.

Recently a renewal of interest in this question has emphasized the importance of details of chemical structure of the amino acids, a factor not heretofore appreciated. Criticizing the use of phlorrhizin as unphysiologic, Butts and his co-workers¹ have employed the effect on artificial ketosis induced in experimental animals by oral administration of sodium acetoacetate as well as the change in amount of liver glycogen brought about by optically active forms of the amino acids. It was found that aminoacetic acid, early recognized as an important glycogenic amino acid, is inferior in this respect as well as in ketolysis to both *dl*-alanine and *d*-alanine. The latter compound, the naturally occurring form of alanine, is superior to the others. As ketolytic substances *l*-aspartic acid, *d*-glutamic acid and *dl*-aspartic acid are all inferior to *dl*-alanine, whereas *l*-aspartic acid, *dl*-aspartic acid, *d*-glutamic acid and *dl*-glutamic acid are glycogenic in the order named.

Of considerable interest are the observations on the various leucines. Leucine has persistently given negative results in experiments on glycogenesis, in these more quantitative studies it is reported to yield carbon

was formed by *dl*-isoleucine and by *dl*-norleucine and the latter was also ketolytic. These observations are interesting in the light of the recent demonstration of the essential nature of leucine and isoleucine, it would appear that their indispensability does not rest primarily on the metabolism of the non nitrogenous portion of the molecule. These newer observations on the correlation between the finer details of the structure of amino acids and their metabolic change to carbohydrate emphasize again the extraordinary specificity of biologic processes. In time they may exert unsuspected influence on the conceptions and treatment in the field of internal medicine.

Current Comment

CANADIAN EXPERIENCE WITH ZINC SULFATE SPRAYS FOR PREVENTION OF POLIOMYELITIS

The serious outbreak of poliomyelitis in and around Toronto this year afforded an exceptional opportunity for the study of the prophylactic value of zinc sulfate sprays. The report by Tisdall and his co-workers¹ on this subject deserves careful study. A trial of nasal spraying was approved by the Department of Health of Ontario on August 29. It was agreed that each child should be sprayed on two occasions, ten or twelve days apart, and that from 0.5 to 1 cc of the solution should be placed in each naris in each spraying. The solution contained 1 per cent zinc sulfate, 1 per cent pontocaine and 0.5 per cent sodium chloride. The spraying was done according to the technique of Pett Echols and Richter but differed from their recommended procedure in that it was not administered on three successive days, since this method was considered impracticable. The peak of the epidemic occurred during the week ended September 4. The first spraying, begun on August 31 and completed by September 7, was performed by forty-four attending otolaryngologists of eight hospitals in the city. In the period of one week from the authorization of the study, 5,231 children had received the first spraying. The second spraying extended from the 13th to the 16th of September. No serious complications occurred. Nine hundred and nine tests, representing 740 children were made to determine the number who had lost their sense of smell. From these observations it would appear that some 25 per cent had anosmia. A representative control group of 6,300 children was obtained in the city proper. Among the 4,713 children who were sprayed twice, eleven cases of poliomyelitis occurred up to October 12, thirty days from the second spraying. One of these occurred six days after the first spraying and was not included in the analysis. In the control group of 6,300 children eighteen cases occurred. The attack rate in the period from seven days after the

first spraying to thirty days after the second spraying was 21 in the sprayed group and 29 in the control group. The difference is not statistically significant. In the total of the city and suburban groups, the attack rates were 29 in the control group and 18 in the sprayed group, which also was found not to be statistically significant. The report concludes that since the spraying method employed in this study must be conducted by otolaryngologists or other physicians especially trained in intranasal treatment, requires special facilities and cannot be done quickly enough to meet the emergency of an outbreak, it cannot be considered a practical public health procedure.

HEPATIC FUNCTION AND VITAMIN D

In 1933 Gerstenberger¹ concluded from clinical evidence that the action of antirachitic vitamin D is in some unknown way mediated through the liver. Walter Heymann² of the Babies and Children's Hospital, Cleveland, has recently attempted to confirm this conclusion by a study of the effect of experimental hepatic insufficiency on vitamin D therapy in rachitic animals. Rickets was caused and maintained in rats by means of the Steenbock rachitogenic diet. Experimental biliary cirrhosis was produced in one group of rachitic rats by double ligation and transection of the common bile duct. Severe hepatic injury was produced in other groups by intramuscular injections of carbon tetrachloride. Heymann found that from ten to twelve times the routine therapeutic dose of vitamin D was necessary to cure rickets in his biliary cirrhotic group and from two to three times the normal therapeutic dose in the carbon tetrachloride group. In further support of the Gerstenberger theory, Heymann showed that the jaundice associated with experimental hepatic cirrhosis does not impair the calcifying function of the bone. While Heymann's experimental data are susceptible of several interpretations, they do seem to show that normal liver function has an adjuvant part in vitamin D therapy.

Association News

RADIO BROADCASTS

The American Medical Association and the National Broadcasting Company present the fifth series of network health programs, beginning Oct. 13, 1937 and running weekly through June 15, 1938. The programs will be presented over the Red network each Wednesday at 2 p. m. eastern standard time, 1 p. m. central standard time, 12 o'clock noon mountain standard time and 11 a. m. Pacific standard time.

The dates and topics of the broadcasts for the coming month are as follows:

Diet

December 22—Milk from Farm to Table: the production, transportation, pasteurization and home care of milk; its place in the diet, processed milks.

December 29—Dietary Fads: facts vs. fallacies in relation to prevalent false notions on diet.

¹ Gerstenberger H. J. *Monatsschr. f. Kinderh.* 56: 217, 1933.
² Heymann Walter. *Proc. Soc. Exper. Biol. & Med.* 36: 812 (June) 1937.

Contagious Diseases

January 5—Sneezes and Sniffles: cause, spread, prevention of colds, pneumonia and influenza, importance of early medical care.

January 12—Scarlet Fever, Measles and Whooping Cough: modern attitudes toward these diseases, their prevention by community cooperation.

The stations on the Red network are privileged to broadcast the program but, since it is a noncommercial program, they are not obliged to do so. Interest on the part of medical societies, women's auxiliaries and others may have weight with program directors of local stations. A personal visit to the program director might be advisable if the program is not being taken by a local station. This is an opportunity for the appropriate committees of county medical societies to indicate their interest in having this program broadcast in their community and to enlist the interest of other groups.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ARKANSAS

Annual Reregistration Due January 1—Every licensee of the Arkansas Eclectic Medical Examining Board must register annually with the secretary of the board between January 1 and the last day in February and pay a fee, if a resident of Arkansas, of \$2 and, if a nonresident, of \$4. The failure of a licensee to pay the required fee by March 1 automatically suspends his right to practice while delinquent. If he fails for three successive years to pay the required fee, his license is to be canceled, and thereafter he will be reinstated only on such a showing to the board of moral character and professional qualifications as would entitle the applicant to the issuance of an original license and the payment of the same fee as is required for the issuance of an original license.

CALIFORNIA

Plague Infection in Squirrels in Fresno County—Under date of November 5, Dr. Walter M. Dickie, director of the state department of health, reported that plague infection had been proved by animal inoculation in fleas from forty-six golden mantled squirrels collected September 30 in the Cedar Crest area, two miles west of Lake Shore, Huntington Lake, Fresno County, according to *Public Health Reports*.

Society News—Dr. Morris Fishbein, editor of *THE JOURNAL*, Chicago, addressed the Los Angeles County Medical Association December 2 on "Medicine and the National Policy." A dinner in his honor preceded the meeting. A symposium on the treatment of dementia praecox was presented before the Society of Neurology and Psychiatry of Los Angeles, December 15, by Drs. Eugene Ziskind, Los Angeles, David W. Lester, Compton, Cullen Ward Irish, Los Angeles, Douglas R. Dodge, Pasadena, John B. Doyle and Samuel D. Ingham, Los Angeles.

CONNECTICUT

Annual Registration Due During January—Every practitioner of medicine and surgery holding a license to practice in Connecticut is required by law to register during January, with the state department of health, and at that time to pay a fee of \$2. Licensees who have retired from active practice or who live out of the state must register annually but need not pay a fee. A practitioner failing to register is liable to a fine of not more than \$5.

Society News—Dr. Samuel H. Epstein, Boston, addressed the New London County Medical Association October 7 at Norwich on "Treatment of Neurosyphilis." The Middlesex County Medical Association was addressed in Middletown October 12 by Dr. Richard H. Overholt, Boston, on "Surgical Diseases of the Chest." At a meeting of the Tolland County Medical Association in Somers, October 19, Dr. C. Charles Burlingame, Hartford, discussed psychiatric problems.

Aid for Crippled Children—Under the social security act, Connecticut will receive \$60,000 from the federal government to be added to a similar amount appropriated by the last session of the general assembly for the states crippled children program, according to the *New England Journal of Medicine*. The program will include the establishment of five permanent diagnostic clinics throughout the state so that they may be accessible to districts where their services are most needed.

GEORGIA

Personal—Dr. Isham W. Irwin, Albany, received a silver service from the Dawson Kiwanis Club as a token of appreciation for his work in behalf of unfortunate children in Dawson and Terrell County, according to the state medical journal.

Resolution About Anesthesia—A resolution was adopted by the Fulton County Medical Society November 18 asking that the Medical Association of Georgia, Georgia Hospital Association, University of Georgia School of Medicine and Emory University be petitioned to take action to improve the science of anesthesia. The society disapproved the sale to the public of the services of salaried, nonprofessional anesthetists.

Society News—Dr. Evert A. Bancker Jr. discussed "The Electrocardiogram and Its More Common Abnormalities in Man" before the Fulton County Medical Society, Atlanta, November 18. Dr. Martin T. Meyers presented a paper before the society, November 4, entitled "Air Injection in Joint Diagnosis."—Dr. Lewis H. Oden Jr., Blackshear, discussed "The Raw Apple Diet in Infantile Diarrhea" before the Ware County Medical Society in Waycross, October 6.—Papers were presented before the Georgia Medical Society in Savannah, October 26, by Drs. Claude M. Burpee, Augusta, and Walter E. Brown, Savannah, entitled "The Treatment of Gonococcus Infections of the Genital Tract in Girls" and "Unusual Tumor of the Ovaries, Bilateral."—The state board of health opened branch laboratories at Albany and Waycross recently.

ILLINOIS

New County Sanatorium—Dr. Charles K. Petter of the staff of the Glen Lake Sanatorium, Oak Terrace, Minn., has been appointed director and supervisor of the Lake County Tuberculosis Sanatorium shortly to be erected. He will take office about January 1. The voters of the county approved at the November 1930 election a proposition to build a tuberculosis sanatorium with tax revenue to be collected over a period of ten years starting next summer, newspapers report.

Chicago

Outbreak of Smallpox—Six cases of smallpox were discovered in the Roseland district December 11, according to the *Chicago Tribune*. Four of the patients were members of one family and the other two were neighbors. None of the patients have been vaccinated successfully, it was stated. These are the first cases of smallpox reported in the city since April.

Mobile X-Ray Unit—The Chicago Tuberculosis Institute and the Municipal Tuberculosis Sanatorium are sponsoring a traveling x-ray unit to combat tuberculosis among school children in Chicago. The unit was put into service at the Spalding School for Crippled Children recently. It contains dressing rooms and equipment for taking 400 x-ray plates a day and will be moved from school to school, newspapers reported.

KANSAS

Personal—Drs. Willard W. Nye, Eberly J. Leigh, George C. McKnight, all of Hiawatha, and Henry J. Deaver, Sabetha, were guests of honor at a dinner given by the Brown County Medical Society in Hiawatha, November 5. They are all honorary members of the society.—Dr. Charles M. Starr, Larned, has been appointed health officer of Pawnee County.

Society News—The Golden Belt Medical Society was addressed October 14 in Salina by Drs. James A. Simpson, Salina, on Podalic Venous, Harry R. Wahl, dean and professor of pathology at University of Kansas School of Medicine, on "Multiple Tumors of the Sympathetic Nervous System," Ralph H. MacKenzie, M.D., on "Nephritis and Nephrosis," and Frank K. Taylor, M.D., on "Traumatic Injuries of the Head."—At a meeting of the Pratt County Medical Society, Pratt, October 22, Dr. Newman C. Newell, M.D., discussed the treatment of infections with penicillin. Dr. Albert K. Hatcher, Wellington, discussed the maintenance of the blood.—Dr. Howard E. Snyder, Winfield, addressed the Cherokee County Medical Society in

Arkansas City, October 21, on "Treatment of Fractures of the Lower Extremities."—At a meeting of the Anderson County Medical Society in Garnett, October 20, Drs. Ralph L. White and Ray D. Fraker, both of Garnett, discussed injection treatment of hernia and the use and danger of sultanilamide respectively.

LOUISIANA

The Stanford E. Chaille Memorial Oration—Dr. Walter Timme, professor of clinical neurology, Columbia University College of Physicians and Surgeons, New York, delivered the twelfth annual Stanford E. Chaille Memorial Oration before the Orleans Parish Medical Society, New Orleans, December 6. Dr. Timme discussed "Status Hypoplasticus. Its Bearing on All Fields of Medicine and the Automatic Compensatory Mechanisms Involved."

The Rudolph Matas Medical Library—The library of Tulane University of Louisiana School of Medicine, New Orleans, was named in honor of Dr. Rudolph Matas, emeritus professor of surgery at the university, November 29. The special ceremonies paid tribute to Dr. Matas's year of service to the university and to his constant interest in the development of the library. It also marked his seventy-seventh birthday, which occurred September 12. The medical library is in the Hutchinson Memorial Building and numbers in its collection about 30,168 bound volumes, 2,500 original pamphlets, 1,900 mounted portraits, 60,000 reprints, 250 medical bookplates and an extensive collection illustrating medicine in art. The library receives currently more than 350 medical periodicals many of them through the Maurice Stern Fund. Three special collections are the Feingold Library of Ophthalmology, the Hall Library of Dentistry and the recently established Isaac Iva Lemann Collection on Diabetes. Two small rooms were used for a library and reading room as far back as 1843 when the university was the University of Louisiana. In 1893 the Richardson Memorial Building provided space for the library and in 1896 Dean Stanford E. Chaille, with two assistants began the first definite organization of a medical library. The library of the Orleans Parish Medical Society is administered with the Rudolph Matas Medical Library. At the recent dedication Rufus Carrollton Harris, president of the university, presided and Dr. Charles C. Bass, dean of the medical school gave the principal address. Dr. Matas graduated at Tulane in 1880 and was associated with it from 1895 to 1927.

MICHIGAN

Changes in Health Officers—Dr. Thomas I. Gibbon Flint, recently resigned as health officer of Genesee County to accept a similar position in Eaton County to succeed Dr. Joseph W. Davis, formerly of Charlotte, resigned. Dr. Leslie V. Burkett, Midland, formerly health officer of Midland County, has been appointed in Genesee County. Dr. Hugh B. Robins, Marshall, associate director of the Calhoun County Health Department, has been placed in charge of the department, succeeding Dr. Matthew R. Kinde, who is now at the W. K. Kellogg Foundation Battle Creek.

Society News—Dr. Frederick H. Cole, Detroit, discussed "Obstruction of the Vesical Neck" before the county medical society in St. Clair November 16.—Dr. Owen H. Wenzel, Minneapolis, addressed the surgical section of the Wayne County Medical Society November 29 on "Suction in the Treatment of Intestinal Obstruction."—Dr. Harold I. Morris, Detroit, discussed "Cancer of the Bladder" before the county medical society in Jackson November 16.—Dr. William C. MacCarty, Rochester, Minn., discussed breast tumors before the Ingham County Medical Society, Lansing, November 16.

The Novy Fellowship Fund—At a meeting of representatives of the medical classes of the University of Michigan it was decided on behalf of the alumni of the medical school to initiate a ten year campaign for the endowment of a Fredrick G. Novy Fellowship Fund for Research in Bacteriology. Dr. Novy joined the university in 1886 as assistant in organic chemistry. He became dean emeritus and professor emeritus of bacteriology in 1935. A resolution adopted at the meeting provides that the fund shall be administered by the board of regents of the university, the principal sum to remain intact and disbursements from its earnings to be made on recommendation of the director of the department of bacteriology and the executive committee of the medical school to the president of the university and the board of regents. The fund is to be used only for nonrecurrent research purposes.

MINNESOTA

Annual Registration Due During January—Every practitioner of medicine and surgery holding a license to practice in Minnesota is required by law to register annually during January, with the secretary of the board of medical examiners, and at that time to pay a fee of \$2. A licensee who practices without renewing his license is guilty of a misdemeanor and is liable to prosecution.

MISSISSIPPI

New Venereal Disease Clinic—A clinic providing free treatment to indigent persons for venereal diseases was opened in Hattiesburg in October, according to the *Health Officer*. Funds have been supplied by the state board of health and the U. S. Public Health Service through social security appropriations.

Society News—The Coast Counties Medical Society was recently formed by the amalgamation of the Harrison-Stone-Hancock Counties Medical Society and the Jackson County Medical Society, bringing all the counties in the ninth district into one organization. Dr. Edwin B. Van Ness, Gulfport, is president, and Dr. Daniel L. Hollis, Biloxi, is secretary. At a meeting of the Delta Medical Society in Greenwood, October 13, the speakers included Drs. Fred M. Sandifer, Jr., Greenwood, on 'Varicose Veins', Eugene R. Nobles, Rosedale, 'The Problem of Acute Abdominal Pain', Hugh A. Gamble, Greenville, 'Operative Treatment of Carcinoma of the Breast', George J. Mancill, Indianola, 'Obstetrics in General Practice', James W. Barkley, Belzoni, 'Immunization Against Communicable Diseases', and Gilbert F. Douglas, Birmingham, Ala., 'Study of Sterility Using the Rubin Test'. Speakers before the Clarksdale and Six Counties Medical Society, November 10, included Drs. Claude F. Varner, Memphis, on appendicitis, William P. Warfield, Clarksdale, upper respiratory infections in infants and children, and Charles S. Paddock, Memphis, ptychitis in pregnancy. Drs. William L. Little, Wesson, and Joseph E. Green, Laurel, president and president elect respectively of the state medical association, also addressed the meeting.

NEBRASKA

Bequest for Cancer Research—A public school teacher of Omaha recently bequeathed \$1,600 to the Creighton University Tumor Clinic at St. Joseph Hospital. According to the *Nebraska State Medical Journal*, this fund will be the nucleus of an endowment fund, the income from which will be for cancer research.

NEW JERSEY

Public Health Meeting—The sixty-third annual meeting of the New Jersey Health and Sanitary Association was held in Princeton, December 10-11. Among speakers at various sessions were Drs. Russell L. Cecil, New York, on 'Methods of Reducing Pneumonia Mortality', Herbert R. Edwards, New York, 'Latent Tuberculosis and Its Significance in the Control Program', William D. Stroud, Philadelphia, 'Heart Disease', and Livingston Farrand, Ithaca, N. Y., 'Health Education in Its Broader Aspects'.

Society News—The Society of Surgeons of New Jersey held its twenty-fifth anniversary meeting in Trenton, November 20. In the morning operative clinics were held at the Mercer and St. Francis hospitals. After luncheon at the Statcy-Trent Hotel, the afternoon was devoted to the showing of surgical motion pictures. Dr. Frank G. Scammell, Trenton, president of the society, presided at an anniversary dinner in the evening. Dr. George Blakburne, Newark, was elected president for the coming year, and Dr. Walter B. Mount, Montclair, was reelected secretary.

State Board Activities—Among unlicensed practitioners convicted through activities of the state board of medical examiners in recent months are the following reported in November:

Rash Cruso, who was treating foot ailments in a shoe store in Jersey City.

Percy Ridout, an unlicensed chiropractor of Englewood.

John E. Usher, a licensed chiropractor of Orange who was practicing electrotherapy.

Israel Shind, a naturopath of Lakewood, found guilty on a similar charge in 1929.

Nathan H. Fleischer, a registered pharmacist of Englewood.

Paul Piekarsky, a licensed chiropractor of Paterson.

Frank Sinduzzi, a registered pharmacist of Newark.

George Maza, an unlicensed chiropractor of Newark.

James A. Conroy, registered pharmacist of Moorestown.

Nicholas Tarmaki, Orange, who gave his patients medicine prepared by himself.

NEW YORK

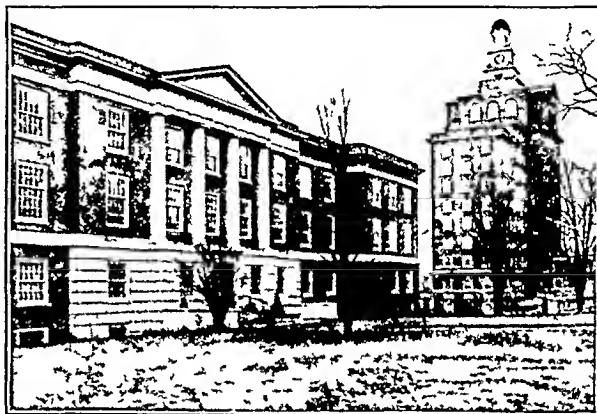
Medical Building Dedicated—The new building of the Syracuse University College of Medicine was dedicated November 22 with ceremonies in the auditorium of the building. The speakers were:

Dr. Henry A. Christian, Hersey, professor of the theory and practice of physics, Harvard University Medical School, Boston; The Frutkin of the Clinician.

Dr. Edward S. Godfrey, Jr., state health commissioner, Albany; The Medical School in the Field of Public Health.

Dr. Ray Lyman Wilbur, president of Stanford University, California, and chairman of the Council on Medical Education and Hospitals, American Medical Association; The March of Medicine.

The alumni held their annual reunion in the building November 20 and there was open house for the citizens of Syracuse November 21. The five-story building, financed by a PWA loan of \$850,000, was designed in English Georgian style by the late James Russell Pope and Dwight James Baum. Laboratories, classrooms, lecture rooms and departmental offices open off three main corridors on each floor, each department's laboratories, classrooms and offices are adjoining. An auditorium seating 400 is on the first floor at the rear of the building. The college library occupies two floors in one wing. The top floor is devoted to the Hendricks Research Laboratory for research in infant feeding. Ground was broken for



New Medical School Building and the Syracuse Memorial Hospital

the new building June 2, 1936, and President Franklin D. Roosevelt laid the cornerstone the following September 29. It is the fourth unit in a plan for a medical center initiated by the college in 1925. Previously completed are the Syracuse Memorial Hospital, shown at the right of the photograph, the State Psychopathic Hospital and the city communicable disease hospital.

New York City

Foundation Opens New Departments—The Hecksher Foundation for Children with headquarters at Fifth Avenue and One Hundred and Fourth Street, announces establishment of a department of hygiene and preventive medicine under the direction of Dr. Heinz R. Landmann. It has also opened a child guidance clinic under the direction of Jacob S. List, Ph.D., a psychologist. Dr. Landmann graduated from the University of Bern, Switzerland in 1934 and was licensed in 1935. The Hecksher Foundation for Children was established in 1921 by August Hecksher.

Promotions at New York University—Dr. Karl M. Bowman was recently promoted from professor of clinical psychiatry to professor of psychiatry to succeed Dr. Menas S. Gregory, now professor emeritus, at the New York University College of Medicine. Dr. Joseph Edward Connery has been promoted to be professor of clinical pathology to succeed the late Dr. Arthur R. Mandel, and Dr. Clarence L. de la Chapelle is acting chairman of the department of medicine. Other promotions are: Drs. Emery A. Rovenstine to be professor of anesthesia in the department of surgery; Lauretta Bender, clinical professor of psychiatry; Frank J. Curran, assistant clinical professor of psychiatry; and Joseph Goldstein, assistant clinical professor of pediatrics.

Medal to Honor Dr. Snow—At a dinner in honor of Dr. William F. Snow, managing director of the American Social Hygiene Association, October 1, at the Waldorf-Astoria, Dr. Snow was presented with a bronze medallion portrait of himself. It is planned to strike a medal from the original sculpture and to award it from time to time as the William Freeman Snow Medal for Distinguished Service in Social

Hygiene A committee of the board of directors of the association will make the awards. Speakers at the dinner were Major-Gen. Merritt W. Ireland, Washington, D. C. who was toastmaster, Dr. Wilbur A. Sawyer, Sir Arthur Newsholme, London, Miss Katharine F. Lenroot, director of the Children's Bureau, Washington, D. C., Dr. Livingston Farrand, former president of Cornell University, Dr. Thomas Parran, surgeon general, U. S. Public Health Service, Washington, D. C., and Dr. John H. Stokes, Philadelphia. Dr. Edward L. Keyes presented the medal.

NORTH CAROLINA

Correction—Annual Registration of Physicians—The item in THE JOURNAL last week under North Carolina with respect to the annual registration required of physicians was in error. The item should have appeared under North Dakota. Physicians in North Carolina are not required to register annually.

Sanatorium Dedicated—A new state sanatorium for tuberculosis, built with PWA assistance at a cost of \$625,000 on Black Mountain near Asheville, was dedicated November 11 with an address by Gov. Clyde R. Hoey. Dr. Paul P. McCain is superintendent of the new 165 bed institution. Dr. Samuel M. Bittinger is medical director and associate superintendent. Dr. McCain is also in charge of the state's other public sanatorium, of 480 beds, known as the North Carolina Sanatorium for Treatment of Tuberculosis at Sanatorium, near Raeford in Hoke County, and Dr. Bittinger has been assistant superintendent and associate medical director.

NORTH DAKOTA

Annual Registration Due January 1—Every practitioner of medicine and surgery holding a license to practice in North Dakota is required by law to register annually on or before January 1, with the secretary-treasurer of the board of medical examiners, and at that time to pay a fee of \$5 if a resident of North Dakota or \$2 if a nonresident. A practitioner may not lawfully practice if he has not registered. If he does so his license may be revoked and can be reinstated on the payment of unpaid fees and 50 cents for each month of default.

OKLAHOMA

Society News—At the annual joint meeting of the Garfield County Medical Society and the Northwestern District Dental Society in Enid, November 18 the speakers were Charles R. Lawrence, D.D.S. Enid, on 'The Relations of the Dentist and the Physician in Care of the Patient' and Dr. James D. Osborn Jr. Frederick, secretary of the state board of medical examiners who discussed an initiative bill proposing to change the composition of the state board.

PENNSYLVANIA

Society News—Dr. Bertram M. Bernheim, Baltimore, addressed the York County Medical Society, York, November 20 on 'Diagnosis and Treatment of Peripheral Vascular Disease'. Drs. John B. Nutt and Thomas Marshall West addressed the Lycoming County Medical Society, Williamsport, December 10, on 'Toxemias of Pregnancy' and 'Treatment of Bladder Tumors' respectively. Dr. Othello S. Kough, Uniontown, gave an address and demonstration on 'Artificial Pneumothorax in the Treatment of Tuberculosis' before the Fayette County Medical Society, Uniontown, December 2. At the annual dinner of the Cambria County Medical Society, Johnstown, December 9 Judge John H. McCann, Ebensburg, spoke on 'The Doctor and the Law' and Dr. Olm G. A. Barker, Johnstown, showed motion pictures 'Through Africa from Cairo to Capetown'. The Harrisburg Academy of Medicine has purchased a larger building for its headquarters.

Philadelphia

Personal—Members of the Proctologic Society of the Graduate Hospital gave a dinner November 20 in honor of Dr. Collier Ford Martin, professor and vice dean of proctology, University of Pennsylvania Graduate School of Medicine. The speaker included Dr. William Wayne Babcock, Edwin S. Clark and Wilmer Kruken, Philadelphia; Clement L. Martin, Chicago; Deacon C. McKee, Lumbago; Frank C. Yeomans, New York; William H. Herrick, Richmond, Va.; Dr. Harry J. B. F. Philadelphia chairman.

Dean Charles H. LaWall Dies—Charles Herbert LaWall, born in Philadelphia, attended the University of Pennsylvania College of Medicine and served as a resident in the department of medicine from 1907 to 1910. He was

appointed instructor at his alma mater. In 1906 he was an associate professor of the theory and practice of pharmacy and in 1918 succeeded Joseph P. Remington as dean. For many years Dr. LaWall was chemist for the bureau of food and chemistry of the Pennsylvania Department of Agriculture and the Pennsylvania Board of Pharmacy. He was elected to the revision committee of the U. S. Pharmacopeia in 1910 and served continuously on subsequent committees including two years as chairman. He was also associated with the revision committees of the National Formulary and the U. S. Dispensatory. Among honors conferred on Dr. LaWall were the Remington Medal of the American Pharmaceutical Association and honorary degrees from the University of Pittsburgh and Susquehanna University. He was president of the American Pharmaceutical Association in 1919 and the American Association of Colleges of Pharmacy in 1923. During the World War he was a member of the auxiliary committee on drugs and medicine of the War Industries Board. Dr. LaWall was also co-editor of the seventh and eighth editions of Remington's 'Practice of Pharmacy'.

WEST VIRGINIA

Society News—Dr. Walter N. Rowley, Huntington, addressed the Fayette County Medical Society, Montgomery, November 9, on 'Estrogenic and Gonadotropic Hormone Therapy'. Dr. William F. Rienhoff Jr., Baltimore, addressed the Harrison County Medical Society, Clarksburg, November 4 on diseases of the gallbladder and gall ducts. Dr. William F. Snow, New York, spoke briefly on the syphilis campaign. Dr. Amos H. Stevens, Fairmont, addressed the Monongalia County Medical Society, Morgantown, November 2 on 'Prognosis and Late Manifestations of Rheumatic Heart Disease'.

New Quarters for Radiologic Clinic—The Huntington Radium and X-Ray Clinic opened new quarters in the Memorial Hospital, Huntington, November 11, with public inspection in the afternoon and a dinner meeting of the Cabell County Medical Society in the evening. Dr. Edwin A. Merritt, Washington, D. C., gave an address on 'Preoperative Radiation: a Therapeutic and Diagnostic Measure,' which was discussed by Dr. Henry Schmitz, Chicago. The clinic now has a high voltage therapy x-ray machine of 220,000 volts. Dr. James Edward Hubbard is director and Dr. Walter Beckett Martin is associate director of the clinic, which was founded in 1921.

GENERAL

Meeting of Psychoanalytic Association—The thirty-ninth meeting of the American Psychoanalytic Association will be held in Washington, D. C., December 27-28 with headquarters at the Hotel Shoreham. Among the speakers will be:

Dr. Sándor Rado, New York, 'Etiology and Treatment of the Neurosis'; Dr. Felix Deutsch, Boston, 'Pain as a Psychosomatic Problem'; Dr. Lucia E. Tower, Chicago, 'Premature Birth as a Factor in Development of a Paranoid Depressive Mechanism'; Dr. Helen Flanders Dunbar, New York, 'Psychoanalysis and the General Hospital'.

Bequests and Donations—The following bequests and donations have recently been announced:

Mount Sinai Hospital, New York, \$10,000 by the will of Mrs. Cyrus L. Lehman; Hospital for Joint Diseases and Montefiore Hospital, New York, \$7,000 each by the will of Samuel Frank; Sinai Hospital, Baltimore, \$10,000 and his medical library by the will of the late Dr. Harry Adler; Presbyterian Hospital, New York, \$10,000 by the will of Henry T. Sloane; Germantown Dispensary and Hospital, Germantown, Pa., \$5,000 by the will of the late Jane Harmer at the termination of a trust.

Meeting of Medical Students—The fifth annual convention of the Association of Medical Students will be held at the medical schools of the University of Chicago and the University of Illinois, December 29-31. Addresses of welcome will be delivered by Drs. Basil C. H. Harvey, dean of medical students, Division of Biological Sciences, University of Chicago; David J. Davis, dean, University of Illinois College of Medicine; and Olm West, Secretary and General Manager, American Medical Association. Panel discussions, lectures and clinics will make up the program. Special features will include tours of the medical schools and the Headquarters of the American Medical Association.

Special Board Examination—The American Board of Obstetrics and Gynecology announces that the next examination for group B candidates who have filed applications will be held in various cities of the United States and Canada, July 1938. This is the written examination and review of case histories. The general oral clinical and pathologic examinations for all candidates (groups A and B) will be conducted by the entire board in San Francisco, June 13-14, immediately before the annual session of the American Medical Association.

Applications for admission to the June 1938 group A examinations must be on an official application form and must be filed with the secretary before April 1, 1938. For further information and application blanks address Dr Paul Titus, secretary, 1015 Highland Building, Pittsburgh.

Biography of Reginald H Fitz—Dr Hyman Morrison, clinical professor of medicine, Tufts College Medical School, Boston, is gathering material for a biography of Reginald Heber Fitz (1843-1913) and requests the assistance of THE JOURNAL in reaching readers who knew Dr Fitz personally or who may have some of his correspondence. Dr Morrison writes that he will be responsible for the safe return of any letters sent to him. Dr Fitz graduated at Harvard University Medical School in 1864 and spent several years in European centers. He returned in 1870 and joined the faculty at Harvard. He was active in the affairs of the school and his clinical work produced important results. In 1886 he published the article in which he established the importance of perforation of the appendix. He retired from Harvard in 1908 as professor of medicine and died Sept 30 1913.

Society News—Dr Robert Tait McKenzie Philadelphia was elected president of the Academy of Physical Medicine at its annual meeting in Philadelphia in October. Drs Rolland A Case, Cleveland, and William H Schmidt, Philadelphia were elected vice presidents and Dr Herman A Osgood Boston, secretary. The next annual session will be in Washington, D C.—Dr James W Jervy Greenville S C, was elected president of the Southern Medical Association at its annual meeting in New Orleans November 30-December 3, and Drs Lucien A Le Douv, New Orleans, and Lee Rice, San Antonio, Texas, were elected vice presidents. The next meeting will be held in Oklahoma City.—A meeting of the secretaries of the sections of the American Association for the Advancement of Science and those of the affiliated societies will be held at the Claypool Hotel Friday, December 31, during the annual session of the association.

Western Surgical Association—Dr Casper F Hegner Denver, was elected president of the Western Surgical Association at its annual meeting in Indianapolis, December 3-4. Drs Charles L Patton, Springfield Ill and Verne C Hunt, Los Angeles, were elected vice presidents and Dr Albert H Montgomery, Chicago, was reelected secretary. The 1938 convention will be in Omaha. Among speakers on the program were

Dr John Alexander Ann Arbor Mich The Indications Technique and Results of Surgery for Bronchiectasis
Dr Angus L Cameron Minot N D Primary Malignancy of the Jejunum and Ileum
Dr Charles W Mayo Rochester Minn A New Method of Repair of Complete Rectal Prolapse
Dr Fred F Attix Lewistown Mont Purulent Pericarditis Due to the Pneumococcus
Dr Edgar L Gilchrist San Francisco Lesions of the Shoulder
Dr Kellogg Speed Chicago Spondylolisthesis
Dr Claude J Hunt Kansas City Mo Pancreatic Cyst
Dr Gordon S Fahrni Winnipeg Manit Hyperparathyroidism

Pan American Cruise Congress—The seventh cruise congress of the Pan American Medical Association will leave New York January 15 and return January 31. Among speakers from the United States will be

Dr William D Haggard Nashville Technic in Treatment of Fibroid Tumors
Dr Chevalier Jackson and Chevalier L Jackson Philadelphia Cancer of the Larynx
Dr Edwin C Ernst St Louis Recent Developments in Relation to the Radiation Management of Cancer
Dr Webb W Weeks New York Operation for Chronic Simple Glaucoma
Dr Howard R Hartman Rochester Minn Treatment of Hemorrhagic Ulcer of Stomach or Duodenum
Dr Henry D Furniss New York Urinary Incontinence in Women
Dr Joseph J Eller New York Cosmetic Results in Treatment of Skin Tumors
Dr James Ewing New York Cancer Pathology
Dr Jerome Webster New York Plastic Surgery Technique
Dr Herman N Bundesen Chicago Amebiasis
Dr Lee M Hurd New York Sinus Operations
Dr Fred H Albee, New York Surgical Restoration of Motion in Bony Stiff Joints

Among other speakers will be Dr Jose Arce, Buenos Aires, Argentina, on "Twenty Years in Chest Surgery."

Academy of Orthopaedic Surgeons—The sixth annual meeting of the American Academy of Orthopaedic Surgeons will be held at the Hotel Biltmore, Los Angeles January 17-20 under the presidency of Dr Arthur Bruce Gill, Philadelphia. Registration will begin Sunday afternoon at 2 o'clock, January 16. A special train on the Atchison, Topeka and Santa Fe Railroad will leave Chicago January 10 at 10 15 a m. There will be a clinical demonstration Monday morning January 17 and scientific sessions will begin in the afternoon. There will be symposiums on nonunion and bone grafts fractures of the spine and manipulative surgery. Among the

speakers on the program will be Drs Norman T Kirk and Howard C Naffziger, San Francisco, Willis C Campbell, Memphis, Tenn, Melvin S Henderson, Rochester, Minn, Edwin W Ryerson, Chicago, George E Bennett, Baltimore, William B Carrell, Dallas, Texas, Arthur G Davis, Erie, Pa, William V Cone and William George Turner, Montreal, Philip D Wilson New York, Johan H Waldenstrom, Stockholm, Sweden, and H Watson Jones, Liverpool, England.

Symposium on Syphilis—Section N, the Medical Sciences of the American Association for the Advancement of Science will devote its entire program at the meeting, December 27-January 1, to a symposium of twenty-nine papers on syphilis. The papers are grouped in sessions on the following topics: historical the causative agent closely related agents, immunity, pathology, various forms of the disease, diagnostic aids, treatment, chemotherapy and toxicity of drugs. Among the speakers will be

Dr William Allen Pusey Chicago The American Origin of Syphilis
Dr Norman R Ingraham Jr Philadelphia Spirochaeta Pallida and the Etiology of Syphilis
Dr John A Kolmer Philadelphia Serologic Reactions in Relation to Infection and Treatment of Syphilis
Dr Paul A O Leary Rochester Minn Neurosyphilis
Dr Charles C Dennis Kansas City Mo Congenital Syphilis
Reuben L Kahn Sc D Ann Arbor Mich The Outstanding Features of the Kahn Antigen
Dr Benjamin S Kline Cleveland The Outstanding Features of the Kline Antigen
Dr Walter M Simpson Dayton Ohio High Temperatures
Dr Harry Eagle Baltimore The Direct Spirochetostatic and Spirocheticidal Action of the Arsphepnamines
Dr Dudley C Smith University Va Untoward Reactions—Intercurrent Infections

Dr Thomas Parran, surgeon general, U S Public Health Service, Washington, D C, will address a general session of the association on "Syphilis A Public Health Program."

Medical Bills in Congress—*Bills Introduced* S 3098 introduced by Senator Capper, Kansas, proposes to provide for uniform regulation of marriage and divorce. The bill provides, among other things, that no license to marry shall be issued to a person who is insane or an imbecile, pauper, epileptic, feeble-minded or afflicted with tuberculosis or a venereal disease. S 3120, introduced by Senator Walsh, Massachusetts proposes to authorize the President to appoint for temporary service in the Navy 100 acting assistant surgeons, who shall have the rank and compensation of assistant surgeons. H Res 375 submitted (by request) by Representative Stack, Pennsylvania, proposes to provide That all World War veterans' service records become an official part of their medical record so that the Veterans Administration must consider any ailment, from which a veteran may be suffering, not proven as service connected by his medical record, to be established as service-connected by consideration of his service record." H R 8655, introduced by Representative Dunn Pennsylvania, proposes to authorize an appropriation of \$200,000,000 for the prevention and cure of cancer, infantile paralysis, tuberculosis, blindness, deafness and "other social diseases." H R 8641, introduced by Representative Palmisano, Maryland, proposes to provide that any honorably discharged ex-service man who entered the service prior to Nov 11 1918 and served ninety days or more during the World War, and who is or may hereafter be suffering from a 25 per centum or more permanent disability not the result of his own willful misconduct which was not required in the service during the war, or for which compensation is not payable shall be entitled to receive a disability allowance at prescribed rates.

CANADA

North Pacific Surgical Association—The annual meeting of the North Pacific Surgical Association was held in Vancouver B C, November 18-20, with Dr William E Gallie, professor of surgery, University of Toronto Faculty of Medicine, Toronto, as the guest speaker. Dr Andrew A Matthews, Spokane Wash, was elected president, Drs Gordon C Kenning, Victoria, B C, and Robert D Forbes Seattle were elected vice presidents and Karl H Martzloff Portland, Ore is secretary.

Orthopedic Service for Paralysis Victims—The department of health of Saskatchewan has established a special orthopedic service at the Grey Nuns' Hospital, Regina for treatment of residual paralysis arising out of a recent outbreak of poliomyelitis. The plan includes three weeks of treatment with medical and hospital care and transportation paid and special splints gratis. It is also a part of the plan to have the child's mother or some responsible person spend three days at the hospital for instruction in continuing the treatment at home. It was estimated that out of 445 cases of poliomyelitis there would be at least 100 patients requiring treatment.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Nov. 20, 1937

The Annual Health Report

In his annual report, just published, Sir Arthur MacNalty, chief medical officer of the Ministry of Health, compares the vital statistics of today with those of a century ago. In 1936 the crude death rate was 12.1 per thousand against 22.4 in the eighteen forties, the infant mortality 59 per thousand live births against 153. The number of infants who died under 1 year of age, 35,425, was less than half the number who would have died under the conditions as recent as thirty years ago. The death rates for both respiratory and nonrespiratory tuberculosis were in 1936 the lowest on record. The standardized death rate from all forms of tuberculosis was 657 per million, against 3,476 in the fifties of the last century. It is noted as "particularly satisfactory" that the mortality from tuberculosis among young women, which showed some increase, is again declining and at an increasing pace.

In 1936 the birth rate was 14.8, a slight increase on the 14.7 of 1935 and 0.4 above that for 1933, which was the lowest on record. The five principal causes of death remain the same as for many years and in the same order: (1) diseases of the heart and circulatory system, (2) cancer, (3) respiratory diseases, (4) diseases of the nervous system and (5) tuberculosis. But between the ages of 15 and 65 tuberculosis takes the third place and diseases of the nervous system the fifth. The proportion of deaths from heart and circulatory diseases has steadily risen during the past five years. During the same period the proportion of deaths from tuberculosis has steadily fallen; the cancer mortality has risen.

It was claimed not long ago that typhoid had practically vanished from this country because of improved sanitation, but a serious increase has recently taken place. In 1936 there were 2,490 notifications (including paratyphoid) with 257 deaths. In 1935 the corresponding figures were 1,750 and 174. At present a serious outbreak is in progress in Croydon, a town near London. It has been noted that contaminated well supplies drinking water. Eighteen persons have been reported today having died, and up to 177 with six deaths. The disease has appeared also in London.

The maternal mortality in 1936 was 365, a slight reduction from 394 for 1935, which again was a reduction from 441 for 1934. Puerperal sepsis accounted for 134, leaving 231 for other causes. Abortion, which appears to be frequent and increasing, is responsible for a number of deaths from puerperal sepsis.

A section of the report is devoted to poisoning from lipsticks and their contents. It is pointed out that it is desirable to determine the ingredients which the patient is sensitive, since a formula without the offending ingredient enables the application to be resumed with impunity. The doctor is mostly at fault, and that most frequently incriminated is cream. Hair dyes of vegetable origin cannot be incriminated, but those which depend on formaldehyde or formalin or its derivative might give rise in some cases to poisoning. It is pointed out that eye makeup, eye-lash stains, eye lotions and eye ointments, and eye drops, and eye-circum-

of an advisory nature has been sent by request to Austria, Belgium, Burma, Canada, Ceylon, Denmark, Egypt, France, Germany, India, Italy, Jamaica, Kenya, Lithuania, New Zealand, Poland, Rumania, South Africa, Sweden, Switzerland and the United States. The national register of leaders in Britain now includes about 3,000 names. To meet the immediate need in the training and provision of leaders, short courses have been held in the evenings or week ends or during vacation. Half-day training courses have proved of great value. This concentrated form of instruction not only gives already trained teachers new material but also arouses enthusiasm. The council considers that 1937 will stand out as the year of national awakening to the urgency of universal physical recreation. This it attributes largely to the work of those individuals and organizations who have labored untiringly toward that end for many years and to further whose efforts the Central Council has offered the strength of coordinated action. Influences from many foreign countries have also been at work and a splendid press campaign has set the seal on success. "Complete fitness in the individual," the report says, "is unfortunately rare. Too often physical and mental well-being are betrayed by moral weakness, or there is mental strength with bodily disability, or else physical and moral health is accompanied by weak mentality. The aim must always be toward the highest, which is perfect ability in every sphere—fitness for life, not merely fitness for games. Such a comprehensive conception presupposes full observance of enlightened rules of nutrition and hygiene."

The Government and Precautions Against Air Raids

The local authorities have objected to bearing so much of the cost of the precautions to protect the civilian population against air raids. The government has therefore undertaken the greater part of the cost. In a memorandum it points out that it has already assumed a substantial liability in the supply of respirators for the whole civilian population, the maintenance of anti-gas training schools, the supply of bleaching powder for decontamination and the provision of protective clothing for the air raid services. It now proposes to pay the whole cost of most of the material and equipment for these. It proposes to ask the local authorities to assume a share of the responsibility only in those matters in which they will administer. The government will make grants to an extent varying from 60 to 75 per cent of the expenditure of the local authorities on air raid precautions. These include the repairing of streets damaged by air raids, the control of lights, decontamination work and fire fighting. The government will provide such fire fighting apparatus as may be necessary for emergency purposes. It will also provide stretchers, blankets, the equipment needed for decontamination and rescue parties, and the equipment and stores for first aid posts and casualty clearing hospitals. On the other hand, the local authorities will undertake the services for which provision cannot be made centrally: structural precautions in public buildings, the provision of public refuges, the organization of local services, training of personnel for decontamination, emergency fire fighting, rescue and repair work and the provision of first aid.

The Aborigines of Australia

It has long been thought that like the Tasmanians the Australian aborigines will not survive the coming of the white man. Recently some 1,800 sent a petition to the king asking him to save them from extinction and empower one of their own people or a sympathetic white inhabitant to represent them in the federal parliament. The causes of their decline are various. The occupation by the white colonists of land over which the natives once hunted and roamed freely has led to their tribalization. They have taken to living in squalid camps on the fringes of bush or cattle stations where they lose interest in life and contract the diseases of the white man. Many will not receive the medical help provided by the government and run in fear

Continued on page 2079

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information

at the mention of the "doctor man," whose work they regard as a kind of sorcery. An alarming fact recently discovered by anthropologists is that tribes which have not been disturbed in the remote parts of the continent are restlessly moving off their traditional lands and that some of them are drifting into areas of white settlement, where their fate seems only too certain. Prof F. Wood Jones, the anatomist and anthropologist, who has vacated his chair at Melbourne University for one at Manchester, made a scathing indictment of Australia's neglect of her aborigines in his farewell address to the Victorian Anthropological Society. He said that when the white colonists arrived in 1788 there were 300,000 aborigines living healthily and happily. Today there were 50,000 with many half castes, who were existing miserably. The dole had pampered natives already degraded. There should be a central anthropologic administration of the natives with medical attention and better social conditions. The government has not entirely neglected the native problem, as Prof Wood Jones seems to imply, and has supplied both grants and medical attention, but the help has not been sufficient.

PARIS

(From Our Regular Correspondent)

Nov 20, 1937

The Annual Congress of Urologists

The thirty-seventh annual congress of the French Urologic Association was held October 4-9 at the Paris Medical School under the presidency of Dr Lepoutre of Lille. As is customary in France, one or more subjects are chosen by vote of the members at the previous year's meeting. One or two members are then appointed by the president to prepare a complete analysis of the literature of the respective subject, including personal observations. This report is sent to each member in printed form about a month before the following year's meeting, so that those who take part in the discussion can be prepared. The subject chosen for the 1938 congress is evaluation of transurethral resection, and for the 1939 congress the treatment of malignant neoplasms of the kidney. The subject chosen for this year was the surgical treatment of nephritis.

This report was read by Drs Chabanier, Gaume and Lobo-Onell, who constitute the medical and urologic members of a team especially interested in developing the surgical aspects of medical nephropathies, as they are termed here, viz of nephritis and hypertension. Failure of medical treatment to check the progress of the renal changes appeared to Harrison and Edebohl to be an indication for operative intervention. The lack of an adequate classification and reliable functional tests soon led to discarding surgery until recently when renewed interest has been shown. In addition to nephrotomy and decapsulation, other procedures such as denervation, adrenalectomy and splanchicotomy have been employed to relieve hypertension. The report was based largely on an analysis of 117 personal observations. The first question that presented itself at the onset of their work was to find a classification. That of Vidal, which was based on the functional syndromes, did not appear as satisfactory as that of Volhard and Fahr, which the authors of the report have had occasion to verify by biopsy in 250 cases of different types of nephritis.

According to Volhard and Fahr there are four principal types of nephritis: (a) glomerulonephritis, (b) the nephroses (c) the nephro-angioscleroses and (d) interstitial nephritis of infectious origin. There are two groups under the heading glomerulonephritis: one in which the changes are diffuse and another in which they are focal. Both of these are most frequently secondary to buccopharyngeal infections. In the acute diffuse form the clinical picture is that of a slight edema, hematuria, slight rise of blood pressure, moderate albuminuria and casts, lasting from fifteen to twenty days. Volhard believes that the condition persists in 30 per cent, but the authors found this to be true of a far greater number of cases. In the

chronic diffuse form, decapsulation has been followed by marked improvement in the hematuria, in pain and in lessening the frequency of acute exacerbations so frequently observed in this group. The salient feature of focal glomerulonephritis is hematuria due to degenerative glomerular lesions. Uncomplicated cases in this group had not been seen by the authors, and the value of operation in cases reported as "nephrites hematuriques" was open to doubt as long as they had not been checked by microscopic study.

In the second principal Volhard and Fahr type, which includes the nephroses and amyloses, decapsulation has been successful in only a few cases of mercurial origin. This is true also in an occasional case of lipid nephroses.

In the nephro-angiosclerosis type there are two groups, a benign one in which the hypertension is the only symptom corresponding to sclerotic changes in the renal arteries and a malignant form or hypertension associated with rapidly progressive involvement of renal function and endarteritis. Denervation performed by the authors in forty cases was followed by a drop in blood pressure, often quite marked, but which was of only a few months' duration. There is, however, a striking improvement in the general condition of the patient and an appreciable interval in the evolution of the disease. In forty-five published adrenalectomies, to which the authors added two personal observations, the operation seems to have been followed by improvement similar to that noted after denervation. In the absence, however, of any microscopic evidence in the majority of the reported cases, it is difficult to decide as to the nature of the underlying pathologic lesions. Preference is to be given to denervation except in cases of adrenal tumor.

In the fourth Volhard and Fahr type the nonsuppurative infectious type of interstitial nephritis, no typical clinical picture is found except in the cases in which an oliguria or anuria corresponds to edema and round cell infiltration in the renal interstitial tissue. Eleven personal cases of secretory anuria, verified by finding edema in the biopsy specimens, were reported. In all the cases, although there was a marked temporary increase in the output of urine, only two patients recovered. They found twenty-three reports of secretory anuria of varying etiology without microscopic control in which recovery followed either decapsulation or nephrotomy. Intervention is indicated if the anuria is of more than three days' duration and should be combined with medical treatment. The conclusions of Volhard and Fahr are that operative intervention yields results in medical nephritis which are beyond all doubt, even in cases in which little can be expected of such treatment. The control of all surgical cases ought to be made by microscopic examinations of sections of tissue removed at operation. If surgery is to be of any help, one must not wait too long before employing it. The discussion was opened by Professor Chevassu of Paris who doubted the value of biopsy because of the fragility of the convoluted tubules. He emphasized the necessity of a cytobacteriologic examination of the urine in nephritis. If there is a marked increase in the number of leukocytes a diagnosis of an infectious origin must be made, but there were many cases of infectious nephritis in which as few leukocytes are found as in the suppurative hematogenous cortical form. Cases of nephritis of apparently infectious character call for treatment of the upper respiratory tract by specialists, because the primary focus is in the nasopharynx and unless such a focus is eliminated, the nephritis will not improve.

Le Clerc Dandoy of Brussels maintained that abnormal mobility of the kidney plays an important part in essential hematuria or nephritic hematurique. Orthostatic albuminuria is often due to the passive hyperemia in movable kidney.

Louis Michon of Paris based his conclusions on thirty personal observations. At the onset of an acute glomerulonephritis, decapsulation often improves and in some cases will cure the condition. In anuria due to acute glomerulonephritis, early

bilateral decapsulation is to be recommended. Even in acute mercurial nephrosis, decapsulation in conjunction with the administration of saline solution and sodium bicarbonate solution aids in increasing diuresis. He had never observed any benefit from decapsulation in acute exacerbations of the chronic types of nephritis. Denervation is a much simpler method of treatment of hypertension than adrenalectomy or splanchnec-tomy and equally efficacious. The immediate result is satisfactory, but it has not proved to be permanent in a single case. Perhaps the end results would be better if such cases came to operation earlier.

Darget of Bordeaux stated that the three indications for operative intervention in chronic nephropathies were (1) anuria and oliguria, (2) hematuria and (3) hypertension. There is no difference of opinion as to the value of decapsulation in acute glomerulonephritis and in interstitial nephritis. In hematurias it is advisable to give transfusions before a decapsulation. Denervation in two sittings is indicated for cases of nephro-angiosclerosis. At the same time, the adrenal should be examined for marked pathologic changes calling for adrenalectomy.

Other papers read at this year's urologic congress which were of special interest included the following:

Chevassu of France recommended the use of retrograde ureteropyelography as a check on functional tests and cyto-bacteriologic examination of the urine in determining the functional capacity of a kidney before operation. He based his opinion on 7,000 cases, having found that, when there was a difference in the function tests between the two kidneys, retrograde ureteropyelography always yielded information as to which was the diseased side and the character of the lesion. Excretory urography had proved to be of little value in many cases because the visualization was often too indistinct to war-rant the drawing of any conclusions.

Dos Santos of Portugal recommended nephrectomy as soon as a diagnosis of infarction of the kidney due to embolism or thrombosis of the renal artery or vein had been made. Too long a delay was likely to favor extension of the thrombosis to the vessels of the opposite kidney.

Professor Tiffeneau Appointed Dean of Medical School

At the October 28 meeting of the faculty of the Paris Medical School the pharmacologist Prof. Marc Tiffeneau was elected as the successor of Professor Roussy, the former dean, who has recently been promoted to the presidency of the University of Paris, better known to foreigners as the Sorbonne. Professor Tiffeneau became a member of the faculty of the medical school in 1910, being appointed at that time associate professor of pharmacodynamics and later occupying the chair of pharmacology. Professor Tiffeneau has an international reputation as an authority on the problem of the relations of chemical composition and pharmacodynamic action, which study has led to the discovery of new pharmaceutical preparations. He has lectured in many foreign countries and is a member of several commissions of the League of Nations one for the biologic evaluation of drugs and others for the control of opium consumption. He has also been a fellow of the Academy of Medicine since 1927.

Tuberculin Skin Reactions in Girls

At the June 12 meeting of the Paris Tuberculosis Society, Ritt and Tuchula said that an investigation among students between the age of 20 and 22 years had given the following result: A tuberculin skin test for Nurses 27 per cent of 111 pupils of the University of Medicine gave a positive reaction. At the Social Service School the reaction was 27 per cent of 111 students, and at the University of Medicine 27 per cent of 111 students. In the discussion, Cureux reported a similar examination of a larger number of pupil nurse and medical student. Among the former, the

percentage of negative reactions varied from 29 to 30 and among the medical students it was 33. In closing Flierny Bernard insisted that a long rest period should be granted every pupil nurse who had a negative skin reaction. This was also the opinion of the phthisiologist Rist.

VIENNA

(From Our Regular Correspondent)

Oct 15, 1937

Annual Report on Sickness Insurance

The annual report for 1936 on the various sickness insurance organizations of Austria contains many instructive data. The Workers' Sickness Insurance Club of Vienna for example includes among its membership 317,000 directly insured workers and 236,000 relatives of the insured, a total of 553,000 persons. The sum of 4,560,000 Austrian shillings was expended for sick benefits to the directly insured workers and 610,000 shillings for benefits to workers' relatives. These benefits included both general and special medical services. If to the foregoing sums is added the 1,150,000 shillings disbursed for dental care the grand total amounts to 6,300,000 shillings (more than \$1,200,000) or 19.5 per cent of the club's entire income.

The second largest sickness insurance club, that of the federal employees, has a membership of 350,000, with 217,000 in Vienna alone. The ratio of direct insured members within this group to the insured's relatives is 53 per cent to 47 per cent. Expenditures for medical care (general and special) amounted to 7,250,000 shillings (around \$1,500,000) or 32 per cent of all funds disbursed by the club. Another 2,500,000 shillings (\$500,000) or 11 per cent of all disbursements went for dental care. Therapeutic substances and appliances requisitioned by its members cost the club 2,750,000 shillings, or 13 per cent of expenditures, 21 per cent of the club's income was paid to general practitioners, more than 12 per cent for dental care. In comparison with former years an increase in the number of claims for services of specializing physicians as distinguished from general practitioners has been discernible. The expenditure for pharmaceutical substances and so on was less than 3,000,000 shillings, in contrast to 3,500,000 shillings in the preceding year. Nearly 4,500,000 shillings was spent on hospital care for members. The 1936 statistics show an obvious diminution in the costs of sickness when compared with the figures for previous years. The explanation for this must lie in a generally more favorable condition of health among club members. Already the membership is being drawn from better social strata.

Another similarly organized sickness insurance club is composed of municipal employees of Vienna. It numbers 76,000 directly insured persons and their dependents. In 1936 this club spent 2,000,000 shillings for medical care, namely, 37 per cent of all its disbursements. It is interesting to compare the amounts expended by this club for general and for special medical care. In 1936 there was an average per claimant of 369 office calls on and 156 house visits from the general practitioners, as against 103 office calls on and 015 visits from the specialist. A member might choose from among approximately 2,500 general practitioners and 700 specialists. The report also includes analogous data on various minor sick insurance organizations in Vienna. Among the groups represented in the minor clubs are apprentices, assistants and other workers in agriculture, in the butcher trade and in hotels and similar small corporations. The average expenditure of these clubs is fairly constant amounting to from 18 to 20 per cent of the annual income. Naturally the compensation of the physician who serves one of these minor clubs will be commensurately smaller. The income per physician from this type of practice scarcely averages more than 50 or 60 shillings monthly as against the average monthly incomes of from 300 to 400 shillings enjoyed by the doctors attached to the larger insurance club. There are, however, a fairly large number of so called upper bracket r

who are able to realize more substantial incomes from practice among the minor clubs. Many specialists in particular (such as surgeons, orthopedists and laryngologists) have been able to earn 2,000 shillings a month, but this has been possible only during the last two years, since the physicians' honorariums in the insurance practice have been based on individual services. The present system works out quite favorably for the attending physician in particular cases.

The Fight Against Disease

Not long ago the new director of Vienna University's Institute of Hygiene, Prof. Dr. Max Eugling, who has been appointed to succeed the hygienist Professor Grassberger, delivered an inaugural address which had as its theme the fight against disease throughout the ages. Professor Eugling indicated that systematic care of the body (hygiene) is the best weapon with which to combat disease and that this fact was known to the ancient Greeks. In Rome six centuries before Christ, the first regularly planned drainage system was constructed and the public baths would accommodate 5,000 visitors. With the destruction of the Roman Empire in the West by the Germanic invaders the institution of the public baths fell into disuse. The Crusades brought into Europe from the Orient a formidable dissemination of contagious diseases, of which leprosy and bubonic plague are examples. At the close of the fourteenth century there were in France alone some 1,500 leprosariums. Even today there are 1,500,000 lepers among the world's population. But this formerly incurable disease can now be quite favorably influenced by treatment with preparations of chaulmoogra oil. Bubonic plague has an interesting history. It was always endemic in the Orient and is frequently mentioned in the Bible. Effective defenses against the plague were unknown. The closer contact between Europe and the Near East which resulted from the Crusades brought with it frequent opportunities for a dissemination of the contagion. The pest came to assume more and more formidable proportions in Europe. Finally, during the years from 1347 to 1350 western Europe experienced a pandemic of plague (the black death) which took the lives of some 25,000,000 persons, a good third of the entire European population of that time. Thereafter as the pest flared up again and again in particular towns it became customary to boycott and virtually isolate the stricken community, a policy that no doubt prevented a recurrence of catastrophes like the black death. Yet in the course of the last three decades 11,000,000 inhabitants of India have succumbed to the pest. Nowadays excellent results are obtained by a combination of prophylactic procedures such as disinfection of laundry by hot steam, a most reliable measure. Some of the more notable landmarks in the history of the war on disease have been the addition of quinine and the arsenicals to the therapeutic armamentarium against malaria and trypanosomiasis, and the discovery of diphtheria serum by Behring and of arsphenamine by Ehrlich. The introduction of routine antitetanic inoculation of men whose wounds had come in contact with the soil proved a prophylactic measure of tremendous importance during the World War. Throughout the conflict tetanus, once so dreaded in war, remained almost without significance. The best protective inoculation known to man is that against smallpox devised by the English physician Edward Jenner. Smallpox vaccination was first practiced on a large scale in Vienna. It might be added that all types of variola have as good as died out in those European countries in which vaccination is compulsory. The younger generation of doctors in Austria, for example, have never seen a case of genuine smallpox. In conclusion Professor Eugling said that the importance of hygiene cannot be overestimated. Just as formerly the consumption of soap within a country was considered a good indication of that nation's culture or lack of culture so today the amount of contagious disease within a country may be taken as a similar criterion.

BERLIN

(From Our Regular Correspondent)

Nov. 1, 1937

Protection Against Diphtheria

The minister of the interior made public, October 2, new guiding principles relative to active protective inoculation against diphtheria. The author states that in the antidiphtheria campaign which has been conducted for many years throughout Germany the procedure that has proved most effective is inoculation. In the future, too, this measure will be relied on whenever an outbreak of diphtheria threatens. However, now as before, voluntary inoculation of large groups of children may be undertaken only with the permission of the ministry of labor. The serum should be injected subcutaneously either into the skin below the clavicle or into the upper part of the arm about on the insertion of the deltoid muscle. No child who has been excused from smallpox vaccination should be submitted to antidiphtheritic inoculation. Dosage should conform to the following prescriptions: If serum that contains 30 protective units per cubic centimeter is used, infants should receive injections of 0.5 cc. and children of school age doses of 0.3 cc. If the serum used contains less than 30 units but more than 10 units per cubic centimeter, infants should receive 1 cc. at each injection, children of school age 0.5 cc. (The dosage should be reduced for debilitated children and children who have already had diphtheria.) To obtain a sufficiently permanent and satisfactory immunization, inoculation with serum of the same strength should be repeated not less than four weeks after the initial injection. If a serum containing from 1 to 10 protective units per cubic centimeter is used, three injections are necessary, each to contain for infants 1 cc. and for children of school age 0.5 cc. The same type of serum ought to be used at all inoculations and the intervals between injections should be of at least four weeks' duration. The foregoing doses have been observed thus far to be well tolerated and no untoward incidents worthy of mention have been reported. If in exceptional instances a severe, medically authenticated reaction should be manifested, repetition of the inoculation is contraindicated.

Pneumothorax in Pulmonary Tuberculosis

At the Woman's Tuberculosis Center of the General Hospital in Hamburg Eppendorf, which institution serves as the university clinic, 298 patients underwent treatment with pneumothorax from 1923 to 1933. Dr. C. Mumme, head physician of the center, who recently reported his observations, has noted latterly a greater utilization of active therapy in pulmonary tuberculosis. In a general hospital, as contrasted with a sanatorium, the tuberculous patients will, for the most part, present the disease in an advanced stage unsuitable for collapse therapy. In 302 performances of pneumothorax and 4,358 refilling operations not one serious complication, such as embolism or fatal hemorrhage, occurred. If an artificial pneumothorax was complicated by a spontaneous pneumothorax (and this is more likely to occur in bilateral than in unilateral pneumothorax) the valvular pneumothorax was already closed if the air was drawn off with the refilling apparatus. Indeed, this was accomplished more quickly if several hundred cubic centimeters of air was removed from the artificial pneumothorax of the opposite side. In fifty-three cases there was a sinus exudate, in fifty cases a moderate exudate and in five cases an exudate so copious that puncture became necessary. During the last three years of the period studied bilateral pneumothorax was performed in thirty-eight cases and these interventions were much better tolerated than the unilateral. Even in an apparently high grade bilateral collapse (one which, according to the roentgenogram involved one fourth of the volume of both lungs) no injury appeared for, although the total capacity was markedly diminished, the residual air and the normal capacity underwent only

slight reduction. Favorable results were obtained even in some cases of severe cavernous pulmonary tuberculosis accompanied by laryngeal tuberculosis. Pneumothorax ought therefore to be attempted even in apparently hopeless cases, provided the disease is not yet present outside the organs of respiration.

Studies of Otitis Media and Eustachitis

Dr. Zollner of the ear clinic at the University of Jena has utilized on a large scale a new diagnostic technic in otitis media and eustachitis. He has found that the permeability of the tuba auditiva can be evaluated by microscopic observation of the membrana tympani. This procedure has elucidated the heretofore vague concepts of "tubal catarrh." The disease conditions loosely classified under this heading run a course marked by similar manifestations, but Zollner by means of precise observation has been able to subdivide these disorders into separate entities that are of disparate etiology and therefore require varied therapy. A genuine catarrhal inflammation of the tuba auditiva or of the middle ear may always be recognized by alterations in the membrana tympani, such as wrinkling, atony and changes in color. Permeability of the tuba auditiva may be badly impaired or may be normal. Actual constriction or occlusion of the tube is rare. In only a few cases is there a question of permanent cicatricial stenosis or stenosis from tumors. A third and not yet sufficiently well understood group of disorders is probably based on alterations of the middle ear. The tubes are in such cases usually permeable. Massage of the membrana tympani will improve the hearing. Still another group of patients present a pathologic dilatation of the tuba auditiva instead of a constriction. This condition is easily overlooked on superficial examination but may be detected with certainty by microscopic studies of the respiratory movements in the membrana tympani. The therapy demanded by cases of catarrhal inflammations is predominantly directed to the nasopharynx. In severe stenosis complicated surgical measures may be necessary, even a direct bouginage through the nasopharynx. Zollner was able to remove a complete bilateral occlusion of the nasopharynx by a plastic operation. In abnormal dilatation of the tube, stimulation therapy directed to the mucosa or a plastic constriction is indicated.

Acute Anterior Poliomyelitis in Apes

At Cologne in 1934 two cases of acute anterior poliomyelitis in chimpanzees were reported. Recently another case of a chimpanzee suffering from spontaneous infection with the same disease was reported also at Cologne. The minister of the interior has ordered that anthropoid apes in the zoological gardens should be closely observed for possible signs of the disease.

BUENOS AIRES

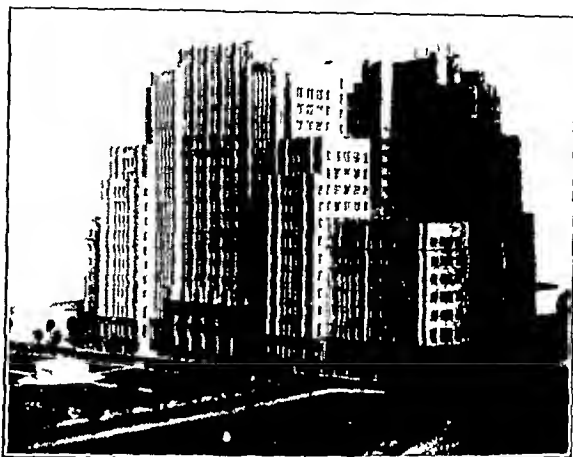
(From Our Regular Correspondent)

Nov. 2, 1937

New Building for Medical School

The cornerstone for the new building of the Faculty of Medicine of Buenos Aires was laid August 9 during memorable ceremonies. The president of the country, the cardinal archbishop and delegates from Bolivia, Chile, Paraguay and Uruguay were present. The new building will cover an area of 132,500 square meters and will be constructed in a large block. The cost of construction is estimated at 16,000,000 Argentine pesos (\$8,000,000). The center of the building will be occupied by a library of 500,000 books with a reading room for 1,000 students. The school of medicine will be located in that part of the building. It will be a four-story building with a quarter for directors and a quarter for teaching histology and microbiology and a quarter for teaching anatomy. It will be located near

the front part of the building. The classes in the faculty were increased during the last year from six to twenty. The school of pharmacy will be a nine-story building at a lateral front part of the building. It will have teaching rooms and museum. Teaching rooms of topographic and descriptive anatomy and operative medicine will be located in the other lateral front part of the building. The department will have a museum of anatomy 1,850 square meters in size. There will be a large assembly hall with room for 1,000 persons, special teaching rooms for each class, and wardrobes for 4,000 medical students.



New building of Faculty of Medicine of Buenos Aires

3,000 students of dentistry and 1,000 students of pharmacy. The basement will be commodious, with parking space for automobiles and elevators for each of the different departments. The work of construction will begin before the end of the present year. Dr. Jose Arce, the dean of the faculty gave orders to demolish the building which is now the faculty of medicine and which occupied the fourth part of a block. The building will be entirely demolished in November of this year. Near the building a hospital for clinical work will be constructed. It will have 2,000 beds.

Marriages

- CHARLES OTTO REINHARDT, Mascoutah, Ill., to Miss Agnes Potasik of Lincoln, in Chicago, September 18.
EDWIN R. TALBOT, Joliet, Ill., to Miss Dorothy Constance Hoyt at Miami Beach, Fla., October 15.
CLYDE MALVERN STUTZMAN JR. to Miss Emily Albright, both of Williamsport, Pa., September 25.
SAMUEL LOGAN STEPHENSON JR. to Miss Dorothy D. Comp-ton, both of Fairfield, Ala., October 30.
WILLIAM ROBERTS TYSON to Miss Elizabeth Gertrude Ehringhaus, both of Norfolk, Va., October 4.
CHARLES MAXWELL COE, Wakefield, Neb., to Miss Miriam Hobson of Carson, Iowa, October 31.
JOHN B. TOBIAS, Wilkes Barre, Pa., to Mrs. Katherine Morgan of Scranton, September 15.
JAMES DANIEL ROYSTER, Elm City, N. C., to Miss Virginia Dean in Halifax, Va., August 16.
EDGAR WALTER STEPHENS JR., Atlanta, Ga., to Miss Ida Lee Mattison of Augusta, October 15.
EDWARD S. MALONEY, Omaha, to Miss Genevieve Mills of Santa Rosa, Calif., October 28.
HUGH WEST Deland, Fla., to Miss Elizabeth Ann Rhett Davidson, N. C., October 9.
PHILIP NATANOFF, Pittsburgh, to Miss Esther Zuckerman of Durham, N. C., August 21.
MELVIN REESF. GUTTMAN to Miss Eleanor Given, both of Chicago, December 5.

Deaths

Blase Cole * Newton, N J, University of Pennsylvania Department of Medicine, Philadelphia, 1907, in 1937 member of the House of Delegates of the American Medical Association member of the Court of Errors and Appeals, formerly state senator, served during the World War, bank president, on the staff of the Newton Memorial Hospital aged 57, died, September 30, of injuries received in an automobile accident

William Preston Holt Jr, Erwin, N C, Jefferson Medical College of Philadelphia, 1926, member of the Medical Society of the State of North Carolina and the Southeastern Surgical Congress past president of the Harnett County Medical Society, aged 36, on the staff of the Good Hope Hospital, where he died, October 7, of an injury received in a fall

George Crarer McIntyre, Toronto, Ont Canada University of Toronto Faculty of Medicine, 1915 fellow of the American College of Surgeons, served with the Canadian Army during the World War, formerly junior demonstrator in clinical surgery at his alma mater, on the staff of the Toronto General Hospital, aged 52, died, September 27

Raymond Spear * Medical Director, Captain U S Navy, retired, Coronado, Calif Jefferson Medical College of Philadelphia, 1895 fellow of the American College of Surgeons entered the navy in 1897 and retired in 1930 for incapacity resulting from an incident of the service aged 64 died, September 28, of chronic myocarditis

Nehemiah Irving Stebbins, Nashville Ark, University Medical College of Kansas City, Mo, 1904 member of the Arkansas Medical Society formerly professor of operative gynecology at the St Louis College of Physicians and Surgeons, on the staff of the Nashville Hospital aged 68 died, September 21

Ernest Lee Cox, Jacksonville, N C, University of Maryland School of Medicine, Baltimore, 1889, member of the Medical Society of the State of North Carolina, past president and secretary of the Onslow County Medical Society, formerly county health officer, aged 72, died, September 17, of chronic myocarditis

William Neuss, Yaphank, N Y Bellevue Hospital Medical College, New York 1889 member of the Medical Society of the State of New York served during the World War aged 71 on the staff of the Swedish Hospital Brooklyn, where he died September 22, of empyema of the gallbladder and bronchopneumonia

Frederick Otis Morse, Newburyport, Mass Tufts College Medical School, Boston 1897 member of the Massachusetts Medical Society for many years examiner for the Metropolitan Life Insurance Company aged 77 died September 22 in the Anna Jacques Hospital, of cerebral hemorrhage and hypostatic pneumonia

George Cullen, Galveston, Texas Northwestern University Medical School Chicago, 1900 medical director of the American National Insurance Company formerly medical director of the Illinois Life Insurance Company, aged 62, died, September 4 of angina pectoris, near Bay St Louis, Miss, en route to Florida

Gibbs Chisholm * Newark, N J Howard University College of Medicine Washington D C, 1919, served as examining physician in the child hygiene division of the city health department, aged 45 died September 17, in the Community Hospital, of Addison's disease and pulmonary tuberculosis

Olafur Bjornson, Winnipeg Manit Canada Manitoba Medical College Winnipeg 1897, professor emeritus of obstetrics at his alma mater fellow of the American College of Surgeons, aged 67, died, October 3 in the Winnipeg General Hospital of carcinoma of the descending colon

Harold Boyce Markham, Marquette Mich University of Michigan Homeopathic Medical School Ann Arbor 1912 member of the Michigan State Medical Society formerly connected with the U S Public Health Service aged 52 died, September 22, of pneumonia

Francis Eugene Salley, Lancaster, S C Medical College of the State of South Carolina Charleston 1935 member of the South Carolina Medical Association aged 29 died September 23, in a hospital at Charlotte, N C of injuries received in an automobile accident

Joseph J Anthony Ryan Chatham N J Georgetown University School of Medicine Washington D C 1934 member of the Medical Society of New Jersey aged 33 died September 25 in St Michael's Hospital Newark of pulmonary tuberculosis

George T Cranford, Seminary, Miss, Memphis (Tenn) Hospital Medical College, 1898, member of the Mississippi State Medical Association, formerly county health officer, aged 60 died September 30, in the Methodist Hospital, Hattiesburg, of pneumonia

Warren D Wellman, Jamestown, N Y Eclectic Medical Institute Cincinnati, 1881 past president of the Chautauqua County Medical Society, on the staff of the Jamestown General Hospital, aged 82, died, September 18, of carcinoma of the rectum

Louis Josiah Leech * West Branch, Iowa State University of Iowa College of Medicine Iowa City, 1881 Civil War veteran aged 91 died, September 23 in the Methodist Hospital, Madison, Wis, of arteriosclerosis and fracture of the femur

John S Zimmermann, Youngstown, Ohio Western Reserve University Medical Department, Cleveland 1895 formerly member of the city board of health aged 73 on the staff of the Youngstown Hospital where he died, September 23

William Everett Quin, Fort Payne, Ala, Kentucky School of Medicine, Louisville 1881, member of the Medical Association of the State of Alabama, formerly secretary of the De Kalb County Medical Society, aged 86 died, September 17

Mabel T Bell, Ventura, Calif, College of Physicians and Surgeons of San Francisco, 1920 member of the California Medical Association, medical director of the Ventura School for Girls, aged 57, died, September 27, of myocarditis

Felix Marcus Tully Tankersley * Montgomery, Ala Tulane University of Louisiana School of Medicine New Orleans, 1923, served during the World War aged 39 died, September 22, following an operation for appendicitis

Samuel McChesney Ryburn, Morristown, Tenn Hospital College of Medicine, Louisville Ky, 1905 member of the Tennessee State Medical Association on the staff of the Morristown General Hospital aged 60 died, September 22

Oscar Francis Broman * Greeley, Colo Grand Rapids (Mich) Medical College, 1903, served during the World War, past president of the Weld County Medical Society, aged 62, died September 5, of acute intestinal obstruction

Edwin Melville Adams * Gridley, Ill, Barnes Medical College, St Louis, 1901, aged 60, on the staffs of St Joseph Hospital and the Mennonite Hospital, Bloomington, where he died September 26, of cerebral hemorrhage

William John Malcolm Armstrong, Mitchell Ont, Canada University of Toronto Faculty of Medicine Toronto Ont Canada, 1889 Bellevue Hospital Medical College, New York, 1889 aged 79 died September 14

George Thompson, Norwich Conn, Medical School of Maine Portland, 1889, member of the Connecticut State Medical Society aged 76 died September 17, of trauma by fall, fractured left hip and bronchopneumonia

Harvey Hay Bemis, Detroit, Detroit College of Medicine and Surgery, 1921, professor of physical diagnosis Wayne University College of Medicine, aged 41 died, October 7, of essential hypertension and myocarditis

Francis Patrick McKenna, Boston, Harvard University Medical School Boston, 1892, member of the Massachusetts Medical Society, aged 69, died, September 11, of arteriosclerosis and cerebral hemorrhage

David Barringer Phillips * Youngstown, Ohio, University of Michigan Department of Medicine and Surgery, Ann Arbor, 1910 served during the World War, aged 58, died, September 22, in Phoenix, Ariz

John Sherwood McBride, Ansley, La Louisville (Ky) Medical College 1886, past president of the Jackson-Lincoln-Bi-Parish Medical Society, aged 77, died, September 13, in the Methodist Hospital, Alexandria

Arthur Edward Brides * Stoughton Mass University of North Carolina School of Medicine Chapel Hill, N C, 1910 served during the World War, aged 52 was found dead in bed, September 25 of heart disease

John A Newcome Vandergrift Pa Western Pennsylvania Medical College Pittsburgh 1892 member of the Medical Society of the State of Pennsylvania aged 72 was found dead in his office September 23

Henry Sisson Cooper, Denver, University of Colorado School of Medicine Denver 1914 member of the Colorado State Medical Society aged 46 died, October 15, in Nuda, of cerebral hemorrhage

John William Summers, Walla Walla Wash Kentucky School of Medicine Louisville 1892 served at various times as a member of Congress aged 67 died September 25 of cerebral hemorrhage

Onofrio La Raja, Scranton, Pa., Regia Università di Napoli Facoltà di Medicina e Chirurgia, Italy, 1905, aged 56, died, September 24, in the Retreat Home and Hospital, Retreat, of arteriosclerosis

Duncan U. Saunders, Eloise, Mich., Detroit College of Medicine, 1906, assistant superintendent of the Eloise Hospital, aged 63, died, September 25, of injuries received when struck by an automobile

Weston Olin Smith, Alameda, Calif., University of California Medical Department, San Francisco, 1891, past president of the city board of health, aged 69, died, September 20, in a local sanatorium

Charles Alsop De Witt Jr., Louisville, Ky., University of Louisville School of Medicine, 1930, aged 32, died, September 24, in the Vermillion County Hospital, Clinton, Ind., of pneumonia

George P. A. Gunther, Boston, University of Pennsylvania Department of Medicine, Philadelphia, 1894, aged 84, died, September 5, in Westborough, of coronary sclerosis and chronic nephritis

James Joline Reed, Pasadena, Calif., College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1888, aged 77, died, September 22, of chronic myocarditis

Robert Putnam Goodkind, Boston, Harvard University Medical School, Boston, 1929, aged 34, died, September 3, in the Massachusetts General Hospital, of subacute bacterial endocarditis

William Thomas Dempsey, Philadelphia, University of Pennsylvania Department of Medicine, Philadelphia, 1905, aged 67, died, October 19, of chronic interstitial nephritis and uremia

George W. Ragan, Cold Spring, Ky., University of Louisville Medical Department, 1891, state senator, for many years bank president, aged 72, died, September 27, of heart disease

Gilman Wayne Stauffer, Akron, Ohio, Ohio Medical University, Columbus, 1901, formerly on the staff of the City Hospital, aged 61, died, September 18, of cerebral hemorrhage

Albert S. Reiter, Myerstown, Pa., College of Physicians and Surgeons, Baltimore, 1882, aged 79, died, September 1, in the Good Samaritan Hospital, Lebanon, of arteriosclerosis

Ulysses S. Grant Arnold, Martinsburg, Mo., Washington University School of Medicine, St. Louis, 1896, aged 72, died, September 19, in Rochester, Minn., of adenomatous goiter

Joel Buford Scholl, Jabez, Ky., Louisville Medical College, 1893, member of the Kentucky State Medical Association, formerly county health officer, aged 70, died, September 4

Lewis Ryans, Louisville, Ky., University of Louisville Medical Department, 1904, formerly state senator, aged 66, died, September 26, of arteriosclerosis and endocarditis

Jesse McCampbell Reed, Magnolia Springs, Ala., University of Alabama School of Medicine, Mobile, 1914, served during the World War, aged 47, died, September 21

Alvah Clayton Bridges, Kahoka, Mo., St. Louis College of Physicians and Surgeons, 1899, also a druggist, aged 67, died, September 5, of cardiovascular degeneration

Charles Edward Davis, Cassopolis, Mich., University of Michigan Department of Medicine and Surgery, Ann Arbor, 1874, aged 93, died, September 28, of influenza

John W. Sitton, Alvarado, Texas (licensed in Texas, under the Act of 1907), owner of a hospital bearing his name, aged 70, died, September 20, of angina pectoris

Herman Isaac Edward Blackmon, Fort Worth, Texas, Meharry Medical College, Nashville, Tenn., 1932, aged 36, was found dead, October 1, of cerebral hemorrhage

William Mead Sams, Kansas City, Mo., Kansas City Medical College, 1896, aged 71, died, in September, at the Kansas City General Hospital, of coronary thrombosis

Emma Eliza Bower, Ann Arbor, Mich., University of Michigan Homeopathic Medical School, Ann Arbor, 1883, aged 87, died, October 11, of cerebral hemorrhage

William Meade Eggleston, Vicksburg, Miss., Washington University School of Medicine, Baltimore, 1875, aged 81, died, September 19, of malignancy of the pancreas

Joseph Ewing Cowperthwaite, Butte, Mont., Chicago Homeopathic Medical College, 1896, aged 64, died, September 15, of coronary occlusion and arteriosclerosis

John E. Reeves, Orange, Texas, Louisville (Ky.) Medical College, 1894, formerly city and county health officer, aged 69, died, September 20, of cerebral hemorrhage

Michael Ravn, Merrill, Wis., Kongelige Frederiks Universitet Medisinske Fakultet, Oslo, Norway, 1880, aged 85, was accidentally drowned, September 30

Herbert Sawyer McCasland, Morrah, N. Y., University of Vermont College of Medicine, Burlington, 1904, aged 71, died, September 24, of cerebral hemorrhage

George Porter Shidler, Torrance, Calif., Northwestern University Medical School, Chicago, 1907, aged 53, died, September 12, of chronic myocarditis

Lemuel Fitch Pattengill, Whitesboro, N. Y., University of the City of New York Medical Department, 1880, aged 85, died, September 13, of mucous colitis

Harriett Beecher Ward, San Francisco, Hahnemann Medical College and Hospital, Chicago, 1896, aged 76, died, September 30, of coronary occlusion

Frank L. De Wolf, San Bernardino, Calif., Kansas City (Mo.) Homeopathic Medical College, 1892, aged 74, died, October 11, of cerebral hemorrhage

Marie A. Ames, North Platte, Neb., John A. Creighton Medical College, Omaha, 1901, aged 74, died, September 6, of heart disease and diabetes mellitus

Benjamin Stilwell Penn, Humboldt, Tenn., Vanderbilt University School of Medicine, Nashville, 1892, aged 64, died, September 26, of angina pectoris

Jay Stephen Malloy, Indianapolis, American Medical College, Indianapolis, 1896, aged 79, died, September 26, of chronic myocarditis and arteriosclerosis

Michael Joseph Murphy, Providence, R. I., Bellevue Hospital Medical College, New York, 1893, aged 67, died, September 26, of coronary disease

Walter Ambrose Huber, Hilliards, Pa., Western Pennsylvania Medical College, Pittsburgh, 1905, aged 57, died, September 29, of carcinoma

Louis Fourgeaud, Breaux, Bridge, La., University of Louisiana Medical Department, New Orleans, 1883, aged 81, died, September 10

Isaac N. Cottle, Oklahoma City, Kentucky School of Medicine, Louisville, 1903, aged 59, died, October 9, of acute dilatation of the heart

Thomas Albert Weaver, Blachleyville, Ohio, Toledo Medical College, 1898, aged 67, died, September 30, of influenza and edema of the lung

Charles Edwin Marshall, Buffalo, Albany (N. Y.) Medical College, 1893, aged 66, died, September 28, of chronic nephritis and myocarditis

Edwin L. Clark, Rockford, Ill., Bennett College of Eclectic Medicine and Surgery, Chicago, 1883, aged 88, died, October 21, of senility

Clarence William Taylor, Glendale, Calif., University of Louisville (Ky.) Medical Department, 1912, aged 52, died, September 11

Dayton H. Hornor, Roseville, Calif., Illinois Medical College, Chicago, 1899, aged 69, died, August 18, of coronary occlusion

Claude B. Rather, Bullard, Texas, University of Louisville (Ky.) Medical Department, 1890, aged 68, died, August 31, of nephritis

John Scott, Hazleton, Pa., Baltimore University School of Medicine, 1904, aged 65, died, September 12, of chronic myocarditis

H. Ellen Walker Berry, Erie, Pa., Cleveland Medical College, 1893, aged 68, died, October 6, of cerebral hemorrhage

Frank R. Blackshire, Colorado Springs, Colo., Barry Medical College, St. Louis, 1898, aged 70, died, September 29

John H. Conway, Atlanta, Ga., University of Georgia Medical Department, Augusta, 1884, aged 81, died, October 7

Jesse Lewis Rains, Seattle, Wash., Jefferson Medical College of Philadelphia, 1905, aged 60, died, September 27

Robert L. Mercer, Shelby, Miss., Hospital College of Medicine, Louisville, Ky., 1904, aged 69, died, September 10

R. W. Bryant, Moultrie, Ga., Atlanta Medical College, 1895, aged 67, died, September 19, of heart disease

Wade Sperry, Hamburg, Iowa, Ensworth Medical College, St. Joseph, Mo., 1895, aged 76, died, September 1

Simon P. Berns, Willow Hill, Ill., Missouri Medical College, St. Louis, 1881, aged 78, died, September 24

Joseph K. Baker, Mooresburg, Tenn. (licensed in Tennessee in 1913), aged 68, died, September 20

Bureau of Investigation

MISBRANDED "PATENT MEDICINES"

Abstracts of Notices of Judgment Issued by the Food and Drug Administration of the United States Department of Agriculture

[EDITORIAL NOTE The abstracts that follow are given in the briefest possible form (1) the name of the product, (2) the name of the manufacturer, shipper or consigner, (3) the composition, (4) the type of nostrum (5) the reason for the charge of misbranding, and (6) the date of issuance of the Notice of Judgment—which may be considerably later than the date of the seizure of the product.]

Diaplex—H W Pierce Denver Composition Essentially plant material (not named) largely stems with a small proportion of saltbush. Fraudulently represented as a safe substitute for insulin in diabetes.—[N J 25838 January 1937]

Hem Roid—Dr Leonhardt Co Buffalo N Y Composition Essentially extracts of plant drugs including aloe and nuc vomica a small amount of witch hazel was found in one sample. Fraudulently represented as a remedy for piles.—[N J 25839 January 1937]

Adams Vapour Ointment—Adams Paper & Specialties Co, Waterloo Iowa Composition Essentially menthol camphor rosin and petrolatum. For asthma catarrh croup boils etc. Fraudulent therapeutic claims.—[N J 25840 January 1937]

Adams Menthol Salve—Adams Paper & Specialties Co Waterloo Iowa Composition Essentially menthol rosin and petrolatum. For nervous headaches muscular rheumatism nasal catarrh etc. Fraudulent therapeutic claims.—[N J 25840 January 1937]

Adams Pain Ointment—Adams Paper & Specialties Co Waterloo Iowa Composition Essentially the oils of petroleum pine needles and sassafras. Fraudulent therapeutic claims.—[N J 25840 January 1937]

Gowans Preparation—Gowans Chemical Co Baltimore Composition Essentially volatile oils including wintergreen camphor eucalypt menthol and turpentine with carbolic acid in a fatty base such as lard. For pleurisy spasmodic croup pneumonia etc. Fraudulent therapeutic claims.—[N J 25842 January 1937]

B L & K R—B L & K R Medicine Co North Chattanooga Tenn Composition Essentially epsom salt extracts of plant drugs alcohol (4 per cent) salicylic acid (0.2 per cent) and water wintergreen flavored. For sore stomach heart disturbances etc. Fraudulent therapeutic claims.—[N J 25843 January 1937]

Alkavls—Williams Mfg Co Cleveland Composition Saltpeter salicylic acid an extract of a plant drug glycerin and water. For rheumatism kidney liver and blood disorders. Fraudulent therapeutic claims.—[N J 25844 January 1937]

Alcohol Rub—Fallis Inc New York Composition In one lot essentially alcohol (2 per cent) water small proportions of glycerin formaldehyde and perfume in another lot essentially isopropyl alcohol (2.1 per cent) and water. Misbranded because of false and misleading representation that the stuff consisted essentially of alcohol whereas it was largely water and because of the claim that it was endorsed by the medical profession whereas the medical profession as a whole had not endorsed the product.—[N J 25845 January 1937]

Carbolil—McKesson Berly Martin Co Nashville Tenn Composition Essentially chloral hydrate (9.5 grains per ounce) and tar oil in an ointment base largely petrolatum. Fraudulently represented as a remedy for boils skin disorders etc.—[N J 25847 January 1937]

Novo Iodine Compound—Union Products Co New York False and misleading representations that it was an iodine compound whereas it was a mixture of chloramine and potassium iodate.—[N J 25848 January 1937]

Kopp's Alcohol—C Robert Kopp Inc York Pa Composition Morphine sulfate (1/4 grain per fluid ounce) flavoring oils including anise oil with alcohol sugar and water. Fraudulently represented as a safe and proper medicine for infants and young children.—[N J 25849 January 1937]

Slim—Forest Hill Pharmaceutical Co East Cleveland Ohio Composition Capsules each containing 1 grain of dimorphinol in milk sugar. Fraudulently represented as a safe treatment for obesity.—[N J 25850 January 1937]

Eucaline (Regular)—Eucaline Medicine Co Dallas Texas Composition Essentially quinine and cinchonidine alkaloids (4.58 grains per fluid ounce) iron chloride an extract of a laxative plant drug eucalyptus oil and a small amount of alcohol with sugars and water. For malaria chills fever etc. Fraudulent therapeutic claims.—[N J 26119 February 1937]

Hawley's Ointment—Ancent Laboratories Texarkana Texas Composition Essentially lanolin camphor and boric acid. Fraudulently represented to prevent influenza and to be a remedy for catarrh hay fever croup etc.—[N J 26170 February 1937]

Melatal—Melatal Laboratories Oakland Calif Composition Essentially a crude oil. Fraudulently represented as a remedy for diabetes stomach and kidney disorders etc.—[N J 26171 February 1937]

Dabon Brushless Modern Shaving Cream—Dostane Products Corp Brooklyn Composition Essentially stearic acid potassium stearate and unsaponifiable matter emulsified with a large proportion of water. Fraudulently represented as an antiseptic and a healing agent.—[N J 26171 February 1937]

Zann Itc—Richard I Morgan Toppemish Wash Composition A light brown clay containing 13.5 per cent of water 51 per cent of silica and 20 per cent of aluminum and iron oxides with traces of calcium magnesium and carbonates. Fraudulently represented to cure diabetes gout rheumatism heart kidney and stomach disorders, etc.—[N J 26128 February 1937]

Mims (J H) Iron Tonic—J H Mims Medicine Co Jacksonville Fla Composition A watery solution of iron with sulfuric hydrochloric and tartaric acids colored with a red dye. Fraudulently represented as a remedy for indigestion dropsy eczema rheumatism pellagra etc.—[N J 26132 February 1937]

Browns (Dr) Baby Oil—Dostane Products Corp Brooklyn Composition A neutral mixture of mineral and fatty oils with a small amount of thymol. Fraudulently represented as an antiseptic and germicide.—[N J 26174 February 1937]

Sys Tone—Manufacturer not named Composition Essentially phosphorus compounds and calcium salts strychnine benzoic acid alcohol sugar and water. Fraudulently represented as a remedy for tuberculosis asthma anemia blood glandular and tissue disorders etc.—[N J 26138 February 1937]

Stocks Nu Tone Tonic—Manufacturer not named Composition Essentially extracts of plant drugs including a laxative with alcohol water salicylic acid and small amounts of sodium and calcium carbonates. For kidney liver and stomach disorders rheumatism etc. Fraudulent therapeutic claims.—[N J 26138 February 1937]

DeWitt's Cough Syrup—Manufacturer not named Composition Essentially ammonium chloride chloroform alcohol sugar and water. Fraudulent therapeutic claims.—[N J 26138 February 1937]

DeWitt's Vaporizing Balm—Manufacturer not named Composition Essentially volatile oils including menthol eucalyptol and camphor in petrolatum. Fraudulently represented as a remedy for hay fever nasal catarrh headache inflammations etc.—[N J 26138 February 1937]

Red Cross Headache and Neuralgia Remedy—Manufacturer not named Composition Essentially salicylic acid acetates common salt and water. Fraudulent therapeutic claims.—[N J 26138 February 1937]

Bi Sarcol—Bi Sarcol Laboratories New York Composition Essentially extracts of plant drugs including licorice with small amounts of inorganic compounds such as magnesium and calcium and 96 per cent of water. Fraudulently represented as increasing the red corpuscles stimulating the digestive juices toning the kidneys etc.—[N J 26140 February 1937]

Bees Laxative Cough Syrup—Manufacturer not named Composition Essentially ammonium chloride sugar and water. Fraudulent therapeutic claims.—[N J 26138 February 1937]

Nevah Tablets—Nevah Laboratories Lock Haven Pa Composition Aminopyrine (16 grains) sodium salicylate (28 grains) colchicin magnesium oxide pumice and starch. For pains of rheumatic fever gout neuritis etc. Fraudulent therapeutic claims.—[N J 26151 February 1937]

Diatone—Diabetic Diatone Inc Chicago Composition Essentially a starch digestant such as pancreatin with salt and clay. Fraudulently represented as a remedy for diabetes.—[N J 26154 February 1937]

Kirby's Miracle Mineral—Kirby's Mineral Products Union S C Composition A solution of iron sulfate in water. Fraudulently represented as a remedy for venereal diseases female disorders pyorrhea, etc.—[N J 26155 February 1937]

APCO No 36 Antiseptic Suppositories—Ampere Products Co West Orange N J Composition Gelatin capsules containing essentially boric acid quinine sulfate and cocoa butter. For feminine hygiene leukorrhea etc. Fraudulent therapeutic claims.—[N J 26166 February 1937]

Old Indian Herb Laxative—Pearson Remedy Co Burlington N C Composition Essentially extracts of plant drugs including aloe with alcohol and water. Fraudulently represented as a tonic blood purifier and a remedy for babies as well as for eczema female troubles gallstones pellagra etc.—[N J 26477 May 1937]

Videx—Grove Laboratories Inc St Louis Composition Essentially aminopyrine (2.6 grains per tablet) and starch. Fraudulently represented as a remedy for menstrual pains neuralgia rheumatism etc.—[N J 26169 February 1937 and N J 26489 May 1937]

M Edouard's B Acidophilus Compound—Z Hubay Memphis Tenn Composition Essentially a moldy mixture of agar psyllium seed milk sugar starchy material and phenolphthalein (about 28 per cent). No significant amount of acidophilus kelp or dextrin present. Fraudulently represented to contain no purgative whereas it did contain phenolphthalein and to change the intestinal flora and re-mineralize the body and furnish that unbroken chain of vitamins which is so necessary to perfect health.—[N J 26159 February 1937]

Correspondence

"RELATION OF NICOTINIC ACID TO HUMAN PELLAGRA"

To the Editor—May I call your attention to an error which occurred in THE JOURNAL, October 9, page 1203, in an editorial comment on "Relation of Nicotinic Acid to Human Pellagra." The statement referred to is as follows: "Chittenden and Underhill using diets similar to those associated with human pellagra were able to produce experimental black-tongue in dogs. They demonstrated that this disease was similar to, if not identical with, human pellagra. Conditions were thus provided for assaying experimentally the various fractions obtained during efforts to concentrate and identify the antipellagra dietary factor."

Reference to the original publications by Chittenden and Underhill and Underhill and Mendel shows that they produced a black-tongue in dogs on a diet containing an abundance of red meat and yeast. Both of these substances will prevent and cure pellagra and the Goldberger type of black-tongue. There have been no assays on pellagra curative material using this Underhill-Mendel type of diet. All the assays in the literature on the pellagra curative factor in black-tongue dogs have been done with the Goldberger type of black-tongue, which was not referred to in your editorial.

In the *Journal of Nutrition*, October 10, in an article entitled "On the Identity of the Goldberger and Underhill types of Canine Black-tongue. Secondary Fusospirochetal Infection in Each," by David T. Smith, Elbert L. Persons and Harold I. Harvey, from the Duke Medical School, it is shown that the clinical picture of black-tongue appears in both types of experimental disease but that the Underhill-Mendel type is probably due to a vitamin A deficiency, while the Goldberger type is the analogue of true pellagra in man.

In view of the great interest which is being aroused in this subject as a result of the discovery of nicotinic acid, I feel that it is important to have the background of this work clearly understood by the whole medical profession.

DAVID T. SMITH, M.D.,
Duke University, Durham, N. C.

NICOTINIC ACID AND VITAMIN B

To the Editor—In THE JOURNAL, October 9, page 1203, you had an editorial entitled "The Relation of Nicotinic Acid to Human Pellagra." It was with a sense of pleasure that I found that in describing the recent important developments in this field you referred to work of mine, carried out some twenty-five years ago, which dealt with the isolation (and the significance) of nicotinic acid, as obtained from the vitamin B complex.

Rice Polishings

Formula Given	Melting Point	Animal Experiment
I $C_6H_5ON_2$	233 C	Not tested
II $C_6H_5ON_2$ (nicotinic acid)	234 C	Not tested

You state that Funk demonstrated that nicotinic acid is a constituent of the naturally occurring vitamin B complex, even though he had apparently assigned the wrong physiologic function to this compound. This statement is incorrect and I would like to ask you kind permission to present the facts.

In 1908, when the vitamin B₁ were made during 1911-1912. The fractionation using yeast and rice polishings was repeated on a larger scale in 1912, and the results were published the following year (*J. Physiol.* 46:173, 1913). *Brit. Med. J.* 1:814 [April 19] 1913. The often repeated

statement that my curative crystalline material of 1911-1912 was merely nicotinic acid is based on an erroneous interpretation of my papers. Nicotinic acid was always found to be inactive as a cure for polyneuritis in pigeons. A summary of pertinent data dealing with the experiment carried out in 1913 will be of interest.

It itself was later found to be nothing but nicotinic acid in perfect agreement with its percentage composition, its melting point and its complete inactivity (when pigeons were used).

Yeast

Formula	Melting Point	Dosage	Activity	Survival
Crude crystalline product		4.8 mg	Cure in 2.5 hrs	46 days
I $C_6H_5ON_2$	229 C	2.8 mg	Improvement	4 days
II $C_6H_5ON_2$ (nicotinic acid)	229 C	10.00 mg	No activity	13 days
III $C_6H_5ON_2$	222 C	5 mg	No activity	0-1 day
I and II		{ I 3.5 mg } { II 2 mg }	Cure in 2.4 hrs	41 days

Even more marked curative results were obtained by combining all three fractions (I, II and III).

It is quite plain, from this summary, that the only claim made for nicotinic acid was that it enhanced the physiologic action when added to the other fraction or fractions—a point of view which is in perfect agreement with our present knowledge of the vitamin B complex. This enhanced action of nicotinic acid and nicotinamide was later confirmed by Szymanska and Funk (*Chem. Zelle u. Gewebe* 13:44, 1926) and Casimir and Jan C. Funk (*J. Biol. Chem.* 110:222 [April] 1937).

I wish to emphasize, finally, that at no time was nicotinic acid mistaken for vitamin B₁.

CASIMIR FUNK, Rueil-Malmaison, France

THE RECURRENT LARYNGEAL NERVE

To the Editor—Granted I erred, even according to the nomenclature which was my authority, in stating there is only one recurrent nerve. There are two. And Dr. Oscar A. Batson's cross tabulation (*THE JOURNAL*, November 6, p. 1562) confirms my contention that "the BNA does (not) recognize the recurrent laryngeal nerve. The nerve under consideration is so designated in the British nomenclature. I might add here that Dr. Batson's tabulation also demonstrates to me the futility of quibbling about names in view of the confusion resulting from differing terminologies. However, the BNA, being the consensus of an international congress, may be expected to be more authoritative than the classification of any national group.

A recurrent nerve is one that retraces its course in arriving at its insertion. Neither the maxillary nor the mandibular nor the many other recurrent meningeal nerves are recurrent in its anatomic connotation. Dr. Wharton Young to the contrary. An anatomic nomenclature serves the purpose of incisive description. From that standpoint "recurrent laryngeal" as there is only one (paired) recurrent nerve, is redundant and therefore ambiguous.

There is an anatomic basis for the relative infrequency of right laryngeal paralysis following thyroidectomy and that basis is explicable only in terms of embryologic development. The right inferior laryngeal or recurrent nerve (BNA) or the right recurrent laryngeal nerve (BR), in deference to Dr. Young and Batson, lies to the right of the esophagus whereas the left lies in front of it in anteroposterior relation, a difference of from 0.5 to 1 cm. in favor of the right for greater depth.

Though the editorial in question (*Total Thyroidectomy for Congestive Heart Failure*, *THE JOURNAL*, July 17, p. 210) concerned thyroidectomy primarily and laryngeal paralysis only incidentally my communication (*THE JOURNAL*, September 4, p. 809) was concerned chiefly with an anatomic explanation of

the clinical observation of the greater frequency of left laryngeal paralysis following thyroidectomy. From that standpoint it was only relatively in error and the inclusion of mediastinal disease in connection with the subject of laryngeal paralysis was more germane to it than reference to the trigeminal nerve was to the subject of recurrence—and with greater accuracy.

It follows that the editorial did not contain 'by implication a gross falsehood'—the error is mine. Nonetheless, in stating that the paralysis "in no instance was bilateral" it was shown that the anatomic basis for the clinical phenomenon was not realized. Had the paralysis been bilateral or only right sided, it would have been the more startling and of itself, been evidence of shoddy surgery.

JOHN F. QUINLAN, M.D., San Francisco

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS BUT THESE WILL BE OMITTED ON REQUEST.

DIFFERENTIATION OF HIP SACROILIAC AND LUMBAR LESIONS

To the Editor—Please differentiate disorders of the (1) hip joint (?) lower part of the back and (3) sacroiliac joint and the anatomic reasons for the tests. SAMUEL L. IMMERMAN, M.D., Philadelphia

ANSWER—In the differentiation of hip, sacro-iliac and lumbosacral disorders the following tests are useful but not always conclusive:

1 Point of tenderness. In hip joint disease, tenderness is commonly found anteriorly over the hip joint capsule. Sacro-iliac involvement may be associated with tenderness over the inferior sacro iliac ligaments. In lumbosacral disorders, tenderness over the interspinous and the iliolumbar ligaments may be found.

2 Mobility tests. Restricted or painful motion of the hip joint may indicate disease of this joint. Care must be taken to differentiate muscle spasm and restriction due to irritation of the sciatic nerve. Mobility of the lumbar spine is tested with the patient in the standing and sitting positions. In lumbosacral disorders the spine is held rigid in both positions while in sacro iliac disorders there may be ability to flex the spine until tightened hamstrings put stress on the sacro iliac joint. The sitting position facilitates flexion of the spine in sacro-iliac disorders.

3 Manipulative tests. These are done with the patient in recumbency. (a) Passive flexion of the two hips at the same time places the lumbosacral joint under stress. (b) The straight leg raising test places stress on the sacro iliac joint by the pull of the hamstring muscles on the ischium and may reproduce pain in this joint. It also puts tension on the sciatic nerve and a positive test may be obtained in any condition associated with irritation of that nerve or its roots. (c) The Patrick sign, obtained by flexion abduction and external rotation of the thigh stretches the anterior portion of the hip joint capsule and through it may place stress on the sacro iliac joint. It may be positive in either hip or sacro iliac joint disorders. (d) The Gaenslen test of hyperextension of one thigh with flexion of the opposite thigh places rotary strain on the sacro-iliac joint. (e) Compression of the iliac crests may occasionally reproduce sacro iliac but not lumbosacral pain.

Thorough roentgenographic study is always indicated and may assist in localizing the disorder.

STAMMERING

To the Editor—Can you advise me as to the desirability of sedative treatment in cases of stammering in young children and the way in which it should be employed? WILLIS H. MCGRAW, M.D., Cortland, N.Y.

ANSWER—Sedative treatment in stammering must, of course be purely palliative. It has ceased to be invoked in mental hygiene clinics where speech defect cases are thoroughly studied for two reasons. One is that the dosage of a sedative in a young child, no matter how small, produces untoward symptoms, and even if the drug is practically non-habit forming such as phenobarbital or bromides, the tendency is for the child

to become accustomed to it. A much more serious objection is the fact that it has not produced the results that had been hoped for. Instead, the child should be thoroughly studied as to the emotional, intellectual and physical components that might be behind such stammering, and treatment should be on the basis of psychologic function rather than on sedation. The majority of stammering cases are due to some emotional maladjustment between the child and the parents. This would have to be looked into with a mental hygiene questionnaire, and the treatment based on the cause rather than the symptoms.

CERVICITIS AND PROSTATITIS AS CAUSE OF LEG PAINS

To the Editor—A woman who had her cervix cauterized under a local anesthetic noticed immediately on leaving the table that a partial numbness existed in the left leg running down into the great toe. This became progressively worse and painful for three days and subsided as healing took place in the cervix. There was no question of pressure as the legs were not held in straps or supports. The numbness is present in varying degree even after eighteen months and is somewhat better after menstruation. The neurotic element can be excluded. A man with a badly infected prostate complained of feeling the massage all the way to his great toes. He had noticed for months that when his prostate was sore there was pain in the toes even to the point of making walking difficult. This symptom was relieved when the prostate was less sore and discharge was minimal. The presence of this symptom on massage of the prostate was confirmed by two gynecologic surgeons who had noticed the same thing. Is this reflex rare? A neurologist consulted by the first patient said he had never heard of it. Is there any suggestion for the relief of numbness and attendant cramps which she complains of if it is due to the cauterization? The pelvis is otherwise entirely normal.

M.D. Pennsylvania

ANSWER—It is difficult to conceive how cauterization of the cervix could be the cause or subsequent numbness in the leg. There is no physiologic or anatomic relationship existing in these areas. Inquiry among several gynecologists of experience fails to elicit a similar observation. It is possible that the patient was placed in such a position that pressure on one of the nerves in the leg was the cause of the pain. It is also possible that the cervix, which is frequently a focus of infection, may have been the cause of a coincidental localized neuritis.

There is also no anatomic relationship between the nerves of the prostate gland and the leg. While pain is frequently observed on vigorous massage of the prostate gland, it is extremely rare to find that the pain extends as far as the toes. The sensitive patient may complain of pain in the lower part of the abdomen, and in some cases the pain may radiate to the hips. The pain in the toes complained of by the patients referred to might be caused by a coincidental neuritis or arthritis subsequent to infection in the prostate gland. In all cases of this kind it would be well to exclude any other possible foci of infection in either teeth or tonsils. It might be advisable to try applications of heat and contrast baths for the numbness and cramps in the leg.

TREATMENT OF CHRONIC PROSTATITIS

To the Editor—A white man aged 44 married for the first time five months ago complains of aching pain in the left knee joint similar to that which he had when he first contracted gonorrhea. At that time (about twenty years ago) he was treated with vaccines and recovered with no disability. He had no epididymitis but had a stricture which was never treated. At present there is no discharge or morning drop. Massage of the prostate brings forth a cloudy whitish fluid. The prostate itself appears soft, symmetrical and not tender. A soft rubber catheter meets resistance in the anterior part of the urethra and obstruction at the membranous portion. The knee joint is not tender, red or swollen nor is there limitation of motion. The patient works in a slaughter house and frequently passes into and out of the icebox at times he even remains in it for an hour or so. Glass tests have changed the urine from cloudy to clear with a lessening in the number of shreds. Smears taken directly from the penis show gram-negative diplococci intracellular and extracellular with epithelial and pus cells. The smear taken after prostatic massage shows a similar picture. I have been using potassium permanganate solution for irrigation and 1:2000 Silvolon solution for instillations. I hesitate to sound the urethra for the stricture for fear of pushing the infection farther up. Can you suggest a procedure for getting a more rapid result? Would intercourse be safe at this stage?

M.D. New York

ANSWER—The first question to be decided is whether this patient has gonorrhea. Repeated examinations by Gram's stain and culture of any urethral discharge and of the prostatic secretion should be made to determine the presence of the gonococcus. If this organism is present, of course sexual intercourse must not be allowed. If it is not present, the condition must be treated as chronic nonspecific urethritis and prostatitis with probable stricture. The urethra should be sounded, and if stricture is found it should be dilated even though an exacerbation of symptoms is possible. A thorough search for other

foci in the teeth or tonsils should be made, and if any infection is found it should be eradicated. Then a regular course of prostatic massage, with irrigations of the urethra and bladder if necessary should be started. One should be careful not to overtreat. It is best to carry on a regular period of treatment for from ten to twelve weeks and to follow this with a rest from all treatment for a similar period. A second course of therapy may be needed. Conditions of this sort are frequently stubborn and prolonged. However, with cooperation and perseverance on the part of the physician and the patient, an eventual cure should be obtained.

FAINING

To the Editor—A woman aged 24 has had trouble with fainting spells ever since she was small. They followed excitement or undue strain. She would come home from a shopping trip and while trying on some of her new clothes would fall in a faint. There is no hysteria, she does not need an audience, neither is there any cry or foaming at the mouth or any convulsions. The patient had fairly regular periods but was given theelin before she could become pregnant. A baby was delivered spontaneously after only six hours of labor. There was considerable postpartum hemorrhage which was finally controlled. Six days later she began having chills and fever which was the beginning of a thrombophlebitis in the left iliac veins. She is still in bed. Her progress has been hampered considerably by these fainting spells which are more severe than any one has seen before. She cannot feel her lower extremities, her head feels like a vacuum. She does not lose consciousness completely. Her blood pressure and pulse remain good, neither is there any change in her temperature. Her red blood count even after considerable blood loss is four million and her hemoglobin seventy per cent. The white count was 20,000 but is only 10,000 now. The blood pressure is always low, systolic 105 diastolic 65. The patient is well developed and well nourished and in my opinion is going to recover from her present trouble. I should like to know the basis for these spells. What can be done for her? Is there a glandular dyscrasia? She seems to be normal in every other respect. The thyroid is normal at present but it did enlarge somewhat with pregnancy. Adipose tissue is distributed normally. The baby was perfect and has remained so and is bottle fed. MD Nebraska

ANSWER—Before a definite diagnosis is made in this case, a more complete series of examinations will have to be carried out. This should include a thorough investigation for the possible presence of a brain tumor and for disturbances in the eyes and ears. Hence it is important for a neurologist and otologist to study the patient. Likewise a basal metabolism study should be made and a roentgenogram of the skull taken. If all physical and laboratory examinations fail to reveal a definite cause, it must be assumed that the cause of the fainting spells is a psychic one. It this is the case a cure can be effected in most instances by a competent psychiatrist or psychanalyst.

ASTIGMATISM

To the Editor—A woman aged 35, tiredness of the eyes, blue halo along the edges of the lens. The patient contained some fine lines in the lens. The patient was normal. Examination of the fundi showed normal. The blood pressure was 135 systolic and 80 diastolic. Corrected vision gave 20/20 in each eye. A first grade colorless lens with an appropriate add for reading was prescribed. The patient returned with the new lenses and is able to see better than formerly but she still complains that she is disturbed by seeing blue above words and a yellow streak below. Also is conscious of seeing these colors when outdoor in bright sunlight. She does not have disturbed vision in reduced illumination and there are no evidences of any other illness. What may be some of the causes for this condition? What can be done to relieve? MD Indiana

ANSWER—The only condition in which a 'streak' or 'line' is seen above or below or both above and below a given word or line of either the Snellen chart at 20 feet (76 meters) or a chart used to test the near vision is uncorrected astigmatism, and patients have never spoken of any color in connection with such doubling of the line. If the blue image is an entirely separate image, astigmatism can be ruled out. If it merges with the image of the word it probably is an odd astigmatic phenomenon. Blue vision and blue lines are encountered only after

INFANTILE VACCINES

To the Editor—Is anthrax vaccine? Is Pasteur's vaccine such a rabbit, the driving cord virus and leads sample vaccine is

nervous tissue of rabbits infected with rabies the virus in the tissue having been killed completely by mixture with phenol. In this case the treatment consists entirely of the injection of killed virus.

PALLIATIVE TREATMENT OF CANCER

To the Editor—Is there anything that might be of value in palliative treatment for a patient dying with cancer of the breast aside from narcotics or the usual drugs? She has had a tremendous amount of x-ray treatment since her breast was removed one and a half years ago.

MD California

ANSWER—Unfortunately, there is no palliative treatment for advanced carcinoma which has any curative value but much can be done for such patients by judicious manipulation of drugs. For example, the administration of small doses of codeine mixed aminopyrine or acetphenetidin and acetylsalicylic acid mixed together may supplant the stronger narcotics, such as morphine or dilaudid, for a time. Each of these opium preparations seems to have a rather different effect on different patients, so that the drugs can be changed after two or three weeks to avoid habituation to one form. In fact one type of drug may prove far better than any other for a given individual. It is entirely a matter of trial.

Care should be taken to remove fluid from the chest in case it accumulates, as is probable, and small doses of x-rays often relieve bone pains and make the patient feel she is being cared for. These x-ray doses should be given not more than twice a week and should be small in amount. Care should be taken not to use the x-rays over areas in which the skin is damaged by previous irradiation, otherwise extensive ulcerations which are painful may appear. The psychic effect of interest and evident sympathy are valuable even in patients suffering from an incurable disease.

TRAUMA AND CORONARY OCCLUSION

To the Editor—A man aged 65 with a past history of active life in regular working hours tells this story. About 3 p.m. he slipped as he sat leaning in a chair and was thrown into a sharply knifed position between his chair and the wall. He had some discomfort across the lower part of his chest and complained of it several times that night. The following morning at 9 o'clock he experienced a much more squeezing type of pain under the sternum and down the left arm. He became pale and began to sweat profusely. His blood pressure dropped from 134 to 104 during the following forty-eight hours. He had a slight fever of 101.2 F, a leukocyte count of 12,000, a sedimentation time which increased in rapidity by the third day and an electrocardiogram typical of coronary occlusion. The course was uneventful, the fever disappeared within a week and the sedimentation time reached normal limits within three weeks. There was no past history suggesting coronary sclerosis. His blood pressure has been in the neighborhood of 132 systolic 80 diastolic. A competent eye man reports that there have never been any arterial changes in the retina. An examination of his peripheral arteries does not at this time reveal any evidence of sclerosis. I would appreciate an opinion as to whether trauma in this case or any other cases might be considered as an etiologic agent in the production of the thrombosis. MD California

ANSWER—From point of time it does seem as if the coronary thrombosis that developed in this patient was definitely related to the injury. Such relationship cannot ordinarily be established. Coronary thrombosis usually comes out of a clear sky, but there are instances in which injury and strain possibly have helped to precipitate coronary thrombosis in a vessel already badly damaged perhaps through rupture or dissection of the wall or of a "cholesterol abscess" or of a sclerotic plaque. There are not, however enough data as yet to make any clear statements about such a relationship.

RENAL CALCULI AND NEPHRITIS

To the Editor—In one of two patients with renal calculi lying in the pelvis of the kidney there was renal colic and in the other no colic. In the heavy albuminuria without (macroscopic) pyuria. In the latter the calculus was removed by operation and the albuminuria soon ceased. In the former there was macroscopic pyuria but an amount of albumin of only one-fifth of all proportion to the amount of pus. Neither showed any signs of diffuse nephritis such as edema, hypertension, vascular changes or retention. What is the pathologic physiology of the albuminuria in these cases? I have difficulty in seeing how glomerular function can be influenced by a calculus in the kidney pelvis accepting the fact that protein in such large quantities must escape by way of the glomerular epithelium. MD Florida

ANSWER—Albumin is frequently found in large quantities in the urine as a result of renal stone. This may be caused by red blood cells, pus cells or a mucopurulent exudate resulting from secondary irritation in the surrounding renal tissue. These elements usually disappear from the urine following removal of the stone, although they may be present in diminishing degree for a period of several months to a year. It is hardly to be expected that there would be any clinical evidence

diffuse nephritis, renal insufficiency or vascular changes in the presence of a presumably normal kidney on the other side. In fact, even though renal calculus is present in a solitary kidney, it is seldom that evidence of diffuse nephritis or renal insufficiency results unless there is very extensive destruction of renal tissue. Glomerular functions are undoubtedly influenced by calculus in the kidney, as shown by reflex inhibition of excretion of dye. This may be graphically visualized in the excretory urogram, where a renal calculus often will cause failure of visualization following intravenous injection of solutions of iodine used for urographic purposes. Tests of renal function made by means of dyes such as indigo carmine, when calculus is present, reveal a lessened intensity or the dye return or complete absence. Within a few days after removal of the calculus the function of the kidney will usually be restored to normal, as shown by normal visualization in the excretory urogram. Since it has been shown that the excretion of urographic mediums is largely a glomerular function, it is evident that the glomeruli are directly involved in reflex inhibition of excretion.

PROGRESSIVE MUSCULAR ATROPHY OR LEAD POISONING

To the Editor—A man aged 58 for the past fifteen years has been employed in a jewelers supply shop. During this time his sole job has been to file solder from the joints of rough gold brass plates. He states he has noticed progressive loss of strength in the hands and arms for a year. Several years ago he had frequent severe headaches and before that he had attacks of colic in the left lower quadrant of the abdomen which a physician told him were due to gallbladder trouble. Examination now reveals marked atrophy of the thenar and hypothenar muscles and the inter ossei and some wasting of the larger groups of both arms and forearms. The fingers of both hands are contracted into the flexed position seen in Dupuytren's contracture. There is a bilateral double wrist drop. There is constant coarse fibrillary twitching in the muscles of the arms and shoulder girdle. There is some weakness of the lower extremities and the gait is of the waddling type but there is no toe drop. There are no sensory changes either subjective or objective. The pupils are equal and regular and they react to light; the fundi are normal except for some tortuosity of the arteries. There is a double false denture. The chest is emphysematous, the lungs hyperresonant, the heart is essentially normal. The blood pressure is 180 systolic 100 diastolic. The hemoglobin is 70 per cent (Tallqvist). No lumbar puncture has been done. I feel very strongly that this is a case of chronic lead intoxication. There is no lead line owing to the false teeth. A smear of the blood showed no basophilic stippling with Wright's stain. Would x-ray examination of the long bones demonstrate the presence of lead? What is the procedure for having an analysis of the urine done? Is a how large a specimen? Assuming that he does have lead poisoning, should treatment be directed toward deleading him with iodides and acid ash diet or should he be given calcium and vitamin D?

M D Massachusetts

ANSWER—This patient's condition sounds more like progressive muscular atrophy than lead poisoning though occasionally lead poisoning may mimic the latter disease. The diagnosis of lead poisoning necessitates some other objective sign. A roentgenogram of the long bones does not demonstrate the presence of lead in an adult, it is of value in children only before the epiphyses unite. To have an adequate analysis of urine for lead, one should have at least a twenty four hour specimen. If one assumes that this man does have lead poisoning, it would be wiser to delead him with a low calcium diet, which contains no milk eggs or green vegetables. To this should be added ammonium chloride in a 20 per cent solution one teaspoonful six or eight times a day in full glasses of water. This should be continued for about six weeks, after which he should return to a high calcium diet. Iodides may be used but they do not seem to be as effective as the treatment outlined.

FIBROSIS OF PENIS FOLLOWING GONORRHEA

To the Editor—A white man aged 66 with a history of gonorrhea forty years ago has had curvature of the penis on erection for the past six months. The curvature is opposite in direction to that of the usual chordae of gonorrhea. Erection is painless. During an erection the patient is unable to straighten the penis manually. Intercourse is impossible. Ejaculations are present. Physical examination is negative. There is no stricture of the urethra. The prostate is normal. The blood pressure is 170 systolic 90 diastolic. The urine is normal. There is nocturia from three to eight times resulting from copious drinking of water. Is it possible that there has been a fascial tear or stretching of the fascia on the urethral side and would it be possible to plicate the fascia on the urethral side or cut fascia on the opposite side so as to allow the penis to be straight on erection? Are there any references?

M D New York.

ANSWER—The condition described is probably caused by a noninflammatory fibrosis involving the corpora cavernosa. It is commonly referred to in the literature as plastic induration of the penis, chronic cavernositis, circumscribed fibrosis, and La Peyronie's disease. La Peyronie gave the first full description of the lesion in 1743.

There is still a difference of opinion as to the nature of the lesion, but apparently it is due to a noninflammatory fibrosis affecting chiefly the smaller vascular sheaths in the corpora cavernosa. Multiple areas of induration are usually found in the penis, most often in the dorsal portion near the base. In some cases there are linear areas of induration which are difficult to palpate. Pathologic examination of the indurated area usually reveals elastic fibrous tissue. Deformity of the penis while in erection, similar to that described, is frequently present and is often painful. The progress of the disease is slow and after reaching a certain stage it usually remains stationary. In many cases the severity of the symptoms will gradually subside.

There is no known effective treatment for this condition. Surgical removal and plastic operations have been tried frequently and have proved unsatisfactory. Better results have been obtained from the use of radium than any other form of treatment. In some instances the plaques are considerably softened and, although they do not usually disappear, they have been so reported in a few cases. In some cases radium has been of distinct benefit in causing amelioration of pain, although the deformity is not usually affected. Patients are often made more comfortable if assured that the disease is not dangerous to life.

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DEXTROSE IN SHOCK TREATMENT OF DEMENTIA PRAECOX

To the Editor—In reading the literature on insulin shock treatment for dementia praecox I find reference to a special tube feeding technic that has been devised by Dr Sakel. Will you kindly describe this technic?

M D Indiana

ANSWER—The hypoglycemic coma or shock is terminated by Sakel with a tube feeding of from 100 to 150 Gm of sugar in solution. Water, tea, milk or orange juice may be used. When it is intended to produce a prolonged shock, the tube is inserted prophylactically at the beginning of coma and its position is checked from time to time by aspiration of gastric juice and a litmus test of its acidity. Dipping the filled funnel below the level of the lung at the beginning of tube feeding will also show, by the absence of bubbles, or by holding it to the ear, that the tube is not in the trachea. Even in severe shock the sugar is quickly absorbed in the stomach. The patient begins to awaken from seven to fifteen minutes after the feeding and is usually completely awake in from half to three quarters of an hour. If vomiting occurs during a tube feeding, the patient is turned on his side and the intravenous administration of sugar is resorted to.

PSYCHOSIS AND HYPERTHYROIDISM

To the Editor—A woman aged 46 with a previous history of nervousness and neurasthenia had a thyroid crisis three years ago and a mild but definite psychosis developed. The psychosis is expressed by a negativistic and unresponsive attitude coupled with the maintaining of a fixed position in bed with the arms rigid and flexed. She hears understandings and remembers as well as any one and is slightly responsive to the questions of her husband who feeds her and attends to her needs. She has a flushed face, a warm and moist skin, eyelids that are closed and tremulous and a hard fixed adenoma of the right lobe of the thyroid. The lungs are clear, the heart rate varies between 110 and 130 and the weight curve is relatively constant. No metabolic tests, chemical tests of the blood (especially of the calcium and phosphorus) or tests of the renal functions have been performed. Can subjective and objective improvement be expected with a thyroidectomy, especially in the mental status? In general what is the mental response to a thyroidectomy in persons who have a psychosis as a result of a hyperthyroidism?

M D

ANSWER—A psychosis appearing in a patient with thyrotoxicosis may disappear with the cure of the thyrotoxicosis. The result depends on a good many factors. If the mental symptoms are entirely the result of the thyrotoxicosis, recovery may be expected but if the toxic state is only an exciting agent for an underlying psychosis, appropriate treatment will leave the patient unchanged as far as the mental symptoms are concerned. There is no definite way to differentiate between these two types of psychotic reaction for there is nothing characteristic about the mental state which is associated with, or caused

by, thyrotoxicosis. Treatment however, is usually indicated and certainly should be advocated in this case. If thyrotoxicosis is present, the patient may respond to iodine and this alone may be enough to improve the mental state. If operation is indicated by the presence of adenoma, surgical treatment should be instituted in the hope that it will affect the psychosis. The value of treatment of thyrotoxicosis in cases of mental disease is discussed on pages 433-436 of "The Thyroid and Its Diseases," by Dr J H Means, Philadelphia, J B Lippincott Company, 1937.

THYROID ADENOMA

To the Editor—A woman aged 24 has an enlargement of the right lobe of the thyroid. This enlargement is the size of an egg and is smooth, uniform and firm but not hard. At times it is more prominent especially during menstruation. There is occasional difficulty in swallowing. She is in good health with the exception of the following symptoms which I have associated with the thyroid: constant fatigue, occasional attacks of tachycardia, occasional periods of being very warm and perspiring hands. There is no perceptible tremor. This swelling was first noticed about a year ago and the patient states that it has become slightly larger. She has gained 7 pounds (3.2 Kg.) in the past two months. Her present weight is 107 pounds (48.5 kg.) and she is 64 inches (163 cm.) tall. A basal metabolic test taken March 20 showed a rate of plus 2.4 per cent. Can this type of thyroid which I have considered a simple goiter be treated with compound solution of iodine and if so what would be the proper dosage? Would it be just as well to use iodostarine giving one tablet daily for thirty days during alternate days? If the latter is recommended over how long a period should this treatment be carried out? What about surgery?

M D Illinois

ANSWER—This patient, in all probability, has an adenoma in the right lobe of the thyroid, its change in size with menstruation strengthens this belief. Pressure on the esophagus may account for the occasional occurrence of dysphagia. It is most unusual for an adenomatous goiter to cause hyperthyroidism before the age of 30, therefore the normal basal metabolic rate in this case is to be expected. However, adenomas may cause symptoms such as she has with the basal metabolic rate in normal limits. A neurosis of some type may account for the symptoms.

Malignant degeneration may occur in such an adenoma, even at her age, and the rather rapid development of the enlargement in this instance would make one suspicious of a malignant condition although the chances are against it.

Compound solution of iodine will not cause the tumor to disappear and its use is not indicated, as it has no place in the treatment of goiter except in hyperthyroidism and then only as a preparation for operation.

Iodostarine or any other iodine prophylactic may be used as a prophylactic against the occurrence of goiter during adolescence and pregnancy and as a treatment for colloid goiter with hope of success up to about the age of 24. It will not cause an adenoma of this size to disappear.

Surgical removal of the adenoma is advisable because it may be the site of malignant degeneration and will prevent the occurrence later of hyperthyroidism and cardiac damage. No other treatment will do other than temporarily influence the symptoms. Surgical treatment will in all probability cause the symptoms to disappear, in addition to being good preventive medicine.

PARATHYROID EXTRACT IN HYPERTROPHIC ARTHRITIS

To the Editor—A patient of mine with long standing chronic hypertrophic arthritis may recently about the use of parathyroid extract in her disease. Can you give me some information as to its effectiveness, dangers and contraindications together with the recommended dosage? I would appreciate it if you would give me some references that I might read.

M D Ohio

ANSWER—The use of parathyroid extracts in chronic arthritis has been discussed in some detail in *Queries and Minor Notes* (THE JOURNAL, Oct 13 1934 p 1171) and critical comments on parathyroidectomy for arthritis are included in the recent "Third Rheumatism Review" (Ann Int Med 10 754 [Dec] 1936). In order to justify the use of parathyroid extracts for arthritis one should be able to demonstrate a consistent abnormality in mineral especially in calcium metabolism in this disease but no such alterations have been found to exist. Recent and previous investigations have failed to show any significant change in the calcium content of the blood or urine or in the calcium content of the bone either with chronic infectious (atrophic) or with hypertrophic arthritis. In 97 per cent of 100 cases of atrophic and hypertrophic arthritis, Hartung and Greene found normal blood calcium values (J Lab & Clin Med 20 920 [June] 1935). These results are in agreement with the report of Buckley and Race (First Research Report of the Devonshire Hospital, Bristol, John Wright & Sons Ltd 1928) of Bauer, Bennett and Short (Brit Eng Med J

Med 208 1935 [May 18] 1933) and of Race (Reports on Chronic Rheumatic Diseases, No 1, edited by C W Buckley, New York, Macmillan Company, 1936).

The abnormalities in bone calcium seen in arthritis (bone atrophy in certain stages of atrophic or rheumatoid arthritis and marginal bone hypertrophy in hypertrophic or osteoarthritis) are believed to be due not to any general fault in calcium metabolism but to local changes in circulation. It has been shown (Jones R W, and Roberts R E Brit J Radiol 7 321 [June], 391 [July] 1934) that an increased blood supply to bone will produce atrophy, a decreased blood supply to bone will provoke hypercalcification. It is suggested that the atrophy of bone in atrophic arthritis may therefore be due to the increased (not decreased) capillary circulation which inflamed synovial membrane exhibits and that arteriosclerotic or inflammatory changes in nutrient vessels of joints may be responsible for some of the bone changes seen in hypertrophic arthritis. Part of the latter at least are probably due to inflammation in the periosteum. Parathyroid extracts have been used for arthritis empirically by a few investigators but without much success (for references see previously mentioned note). More recently some have tried to prove that the arthritic patient (with atrophic arthritis or with "ankylosing polyarthritis or spondylitis") needs not more parathyroid extract but less. It is argued that chronic arthritis is a symptom of hyperparathyroidism and that parathyroidectomy is therefore indicated. Some writers have reported that their arthritic patients have derived considerable relief from this. However, histologic examination of the tissues removed at "parathyroidectomy" by one proponent of this idea indicated that from 28 per cent of his improved patients no parathyroid tissue had actually been removed.

Those who have had the largest experience with cases of undoubted hyperparathyroidism in this country refuse to mention parathyroidectomy for arthritis or to admit that roentgenograms of patients with arthritis or with hyperparathyroidism show common pathologic alterations. It must therefore be concluded that at present there is no rationale for prescribing parathyroid extract or for removing the parathyroids from patients with either atrophic or hypertrophic arthritis.

CYSTOCELE AND BACKACHE

To the Editor—Is uterine anteversion of moderate degree together with a small cystocele of which the patient is unaware a plausible explanation for disabling backache? The degree of flexion is not sufficient to cause any dysmenorrhea.

M D Michigan

ANSWER—Anteversion is not a cause of backache. A cystocele would produce backache only in conjunction with prolapse of the uterus and relaxation of the uterine supports. Of course if there is infection of the urinary tract due to poor emptying of the bladder because of the cystocele it is possible that the backache might be caused by the focus of infection in the urinary tract.

EXERCISE AFTER NEPHRECTOMY

To the Editor—Following a nephrectomy in which there was the usual incision with the division of muscles but no infection and primary repair, what in your opinion is the length of time required before a woman might return to active sports such as golf?

M D Illinois

ANSWER—In the average noninfected case with good repair of the wound following nephrectomy, strenuous exercise such as golf should usually be withheld for a period of at least two months after healing. There are some factors, however, which may extend this interval. In case of a thick muscular or fatty abdominal wall it may be advisable to wait until a period of three months has elapsed. Subsequent muscular weakness in the wound is apt to result from accidental severing of the nerve supplying the area involved rather than from violent post-operative exercise.

AMENORRHEA WITH INFANTILISM

To the Editor—A 15 year old girl who commences have not yet started developed an acute condition of the abdomen. A strangulated right ovarian cyst was removed. It measured about 2 by 3 inches, the entire ovary and right tube were in the strangulated mass. Inoperatively it was noted that her secondary sex characteristics were poorly developed. Operation revealed a uterus little better than infantile. Would gonadotropin therapy be indicated and if so what type? If estrogen is given, will it depress the gonadotropic function of the anterior pituitary? Are there any satisfactory pituitary products available for such a case?

M D Connecticut

ANSWER—At the age this girl has reached the amenorrhea is probably due to the infantilism. Delay in treatment increases the chances that the condition may become permanent so treatment should be begun immediately. Thorough physical exami-

anion must be done in order to rule out vaginal occlusion, anemias, thyroid disease or any general debilitating disease that may be responsible for the amenorrhea. Should the examination reveal nothing abnormal, treatment with gonadotropic extract of pregnancy urine (antuitrin-S, antophysin, A P L, follutin) is indicated. This will stimulate the ovary to produce estrogen which will act directly on the uterus to increase its size and develop the endometrium, thus providing the local conditions that lead to menstruation.

Council on Medical Education and Hospitals

ADDITIONAL HOSPITALS APPROVED

The Council on Medical Education and Hospitals of the American Medical Association has given its approval to the following hospitals since the publication of the last previous list in THE JOURNAL, August 28.

Hospitals Approved for Intern Training

- Norwood Hospital Birmingham Ala
- Highland Sanitarium Shreveport La
- North Louisiana Sanitarium Shreveport La
- Tri State Hospital Shreveport La
- Long Island Hospital Boston
- Providence Hospital Holyoke Mass
- St Mary's Hospital Orange N J
- St Mary's Hospital Passaic N J
- Fairview Park Hospital Cleveland
- St Joseph's Hospital Parkersburg W Va
- Presbyterian Hospital San Juan P R

Hospitals Approved for Residencies in Specialties

- Anesthetics**
 - Hartford Hospital Hartford Conn
 - St Mary's Kahler Hospitals (Mayo Foundation) Rochester Minn
 - Flower Fifth Avenue Hospital New York City
- Medicine**
 - St Luke's Hospital San Francisco
 - Massachusetts Memorial Hospital Robert Dawson Evans Department of Clinical Research and Preventive Medicine Boston
 - De Paul Hospital St Louis
- Neurology**
 - Gallinger Municipal Hospital Washington D C
- Neuropsychiatry**
 - Westboro State Hospital Westboro Mass
 - Bishop Clarkson Memorial Hospital Omaha
 - Harding Sanitarium Worthington Ohio
 - Danville State Hospital Danville Pa
- Obstetrics**
 - Geo F Geisinger Memorial Hospital Danville Pa
- Obstetrics Gynecology**
 - Curney Hospital Boston
 - Flower Fifth Avenue Hospital New York City
- Orthopedics**
 - Shriners Hospital for Crippled Children Chicago
 - St Mary's Group of Hospitals St Louis
 - Robert Packer Hospital Sayre Pa
 - Children's Orthopedic Hospital Seattle
- Otolaryngology**
 - Flower Fifth Avenue Hospital New York City
 - Temple University Hospital Philadelphia
 - Gill Memorial Eye Ear and Throat Hospital Roanoke Va
- Ophthalmology**
 - Collis P and Howard Huntington Memorial Hospital Pasadena Calif
 - Children's Hospital Washington D C
 - Binghamton City Hospital Binghamton N Y
 - Temple University Hospital Philadelphia
 - Elizabeth Steel Magee Hospital Pittsburgh
 - Presbyterian Hospital Pittsburgh
 - Medical College of Virginia Hospital Division Richmond Va
 - State of Wisconsin General Hospital Madison Wis
- Pediatrics**
 - Jewish Hospital Philadelphia
- Radiology**
 - Georgetown University Hospital Washington D C
 - Methodist Episcopal Hospital Indianapolis
 - Crane Hospital Detroit
 - Bronx Hospital New York City
 - Montefiore Hospital for Chronic Diseases New York City (Diagnostic Service)
 - Temple University Hospital Philadelphia
- Surgery**
 - Georgetown University Hospital Washington D C
 - De Paul Hospital St Louis
 - Rutherford Hospital Rutherfordton N C
 - Temple University Hospital Philadelphia
 - Children's Hospital Pittsburgh
- Thoracic Surgery**
 - Homer Folks Tuberculosis Hospital Oneonta N Y
- Tuberculosis**
 - Homer Folks Tuberculosis Hospital Oneonta N Y
 - Jefferson County Sanatorium Watertown N Y
 - State Tuberculosis Sanatorium San Haven N D
 - Cermantown Dispensary and Hospital Philadelphia
- Urology**
 - St Mary's Group of Hospitals St Louis

Medical Examinations and Licensure

COMING EXAMINATIONS

STATE AND TERRITORIAL BOARDS

Examinations of state and territorial boards were published in THE JOURNAL December 11 page 2011

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS Parts I and II Examinations will be held in all centers where there is a Class A medical school and five or more candidates who wish to write the examination Feb 14 16 May 9 11 (limited to a few centers) June 20 22 and Sept 12 14 Ex Sec Mr Everett S Elwood 225 S 15th St Philadelphia

SPECIAL BOARDS

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY Written examination for Group B applicants will be held in various cities throughout the country April 16 Applications due Feb 15 Oral examinations for Group A and B applicants will be held at San Francisco June 13 14 Sec Dr C Guy Lane 416 Marlboro St Boston

AMERICAN BOARD OF INTERNAL MEDICINE Examinations will be held in various centers of the United States and Canada Feb 14 Final date for filing applications is Jan 1 Chairman Dr Walter L Biering 406 Sixth Ave Suite 1210 Des Moines Iowa

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY Written examinations and review of case histories for Group B candidates will be held in various cities of the United States and Canada Feb 5 General oral clinical and pathological examinations for all candidates (Groups A and B) will be conducted in San Francisco June 13 14 Application for admission to Group A examinations must be on file before April 1 Sec Dr Paul Titus 1015 Highland Bldg Pittsburgh (6)

AMERICAN BOARD OF OPHTHALMOLOGY San Francisco June 13 All applications and case reports in duplicate must be filed at least sixty days before the date of examination Sec Dr John Green 3720 Washington Blvd St Louis Mo

AMERICAN BOARD OF ORTHOPAEDIC SURGERY Los Angeles Jan 14 15 Sec Dr Fremont A Chandler 6 N Michigan Ave Chicago

AMERICAN BOARD OF OTOLARYNGOLOGY San Francisco June 10 11 Sec Dr W P Wherry 1500 Medical Arts Bldg Omaha

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY New York Dec 29 30 Sec Dr Walter Freeman 1028 Connecticut Ave NW Washington D C

AMERICAN BOARD OF RADIOLOGY San Francisco June 10 12 Sec Dr Earl R Kirkin 102 110 Second Ave SW Rochester Minn

Vermont June Examination

Dr W Scott Nay, secretary, Vermont State Board of Medical Registration, reports the written examination held at Burlington June 16-18 1937. The examination covered 12 subjects and included 90 questions. An average of 75 per cent was required to pass. Twenty-six candidates were examined, all of whom passed. The following schools were represented:

School	PASSED	Year Grad	Per Cent
Tufts College Medical School	(1936) 84 1	86 1	82 2
University of Vermont College of Medicine	(1937) 78 9	80 7	84 4
	86 1	86 1	87 2
	88 1	88 8	88 8
	88 1	88 8	89 3
	89 3	89 4	89 6
	89 6	89 6	89 9
	90 7	97 3	

Ten physicians were licensed by endorsement from January 27 through October 12. The following schools were represented:

School	LICENSED BY ENDORSEMENT	Year Endorsement Grad of
College of Medical Evangelists	(1935) A B M Ex	
Georgetown University School of Medicine	(1934) Mass Penna	
Boston University School of Medicine	(1916) Mass	(1934) A B M Ex
Hahnemann Med College and Hospital of Philadelphia	(1934) New Jersey	
Univ of Vermont College of Medicine	(1935) (1936 3) A B M Ex	

* License withheld pending completion of internship

Colorado October Report

Dr Harvey W Snyder, secretary, Colorado State Board of Medical Examiners reports the written examination held at Denver Oct 6 8 1937. The examination covered 8 subjects and included 165 questions. An average of 75 per cent was required to pass. Two candidates were examined both of whom passed. Six physicians were licensed by endorsement on October 5. The following schools were represented:

School	PASSED	Year Grad	Per Cent
Georgetown University School of Medicine	(1937)	84	
University of Oklahoma School of Medicine	(1937)	84	

School	LICENSED BY ENDORSEMENT	Year Endorsement Grad of
Northwestern University Medical School	(1933)	Minneap
Creighton University School of Medicine	(1936)	Nebraska
University of Nebraska College of Medicine	(1936)	Nebraska
Jefferson Medical College of Philadelphia	(1929)	U S Army
University of Wisconsin Medical School	(1929)	Utah

Book Notices

Textbook of Diagnostic Roentgenology By Lewis J. Friedman, M.D., Director Roentgen Ray Department Bellevue Hospital, New York. Cloth. Price \$10. Pp. 623 with 638 illustrations. New York & London: D. Appleton Century Company, Incorporated, 1937.

The increasing utilization of the roentgen rays for diagnosis has brought about a need for more treatises on the subject. This book tends to fill the hiatus which exists between the small textbook for students and the large, detailed volume for the roentgenologist. There are three distinct classes of readers whose needs must be met: the undergraduate student, the general practitioner and the specialist in roentgen diagnosis. In a book of this size covering a subject whose scope is so broad, it is extremely difficult to satisfy all these groups. In this volume the student is given insufficiently exact descriptions of x-ray signs and differential diagnostic features. There is a glaring deficiency in the omission of any discussion of the indications for roentgen examination and of the relative value of the method. For the specialist in this field the treatment is too brief to be of great value. For the practicing physician who wishes quickly to find information on some feature of roentgen diagnosis, this book will prove to be most helpful. The author presents a short but clear summary of the fundamental physics of radiation. This, together with the inclusion of sections on x-ray technique, even including dark room procedures, will no doubt also appeal to the general practitioner. Normal appearances are well described and there is a commendable attempt to present the common anatomic variations, particularly of the bones. Nevertheless, certain normal variants, such as the epiphysis of the tuberosity of the fifth metatarsal, the inferior accessory lobe of the lung and the prepyloric notch of the stomach, are omitted. The illustrations are generous and well reproduced. The line drawings are instructive and clarifying. There is an unfortunate tendency both in the text and in the illustrations to present the more unusual manifestations of disease, which may give the unwary reader a wrong impression. For the roentgenologist the illustrations are perfectly clear, but for the student or general practitioner more elaborate labeling and larger captions would be desirable. There are a number of specific criticisms, of which a few examples may be cited. The impression is created that the usual examination in cases of intestinal obstruction is by means of the barium meal, probably a harmful procedure. The use of the term "chronic myocarditis" is vague and misleading. The discussion of bone tumors, a most important subject, is much too brief. The observation of a peripheral triangle in lobar pneumonia can hardly be said to be a rare observation. On the whole, however, the errors are not reprehensible. A bibliography is appended to each chapter. It would be well to point out that this was not intended, in any sense to be complete. Otherwise a reader, unfamiliar with the roentgen literature, might be misled by the extreme paucity of references with regard to certain subjects. This volume covers a great deal of ground and for so short a book is unusually complete. It should be a valuable addition to the library of the general practitioner.

Analyse physique des calculs urinaux et biliaires Par le Dr. E. Pillet. Paper. Price 25 francs. Pp. 96 with 68 illustrations. Paris: Masson & Co., 1937.

Dr. Pillet's small volume contains the results of his study of urinary and biliary calculi by physical means. He has subjected stones after comminution into minute particles to mineralogical examination especially by means of the polarizing microscope. Crystallography, he states, is a science by which exact determinations can be made. These determinations should be made more widely known as the use of a new method of examination brings with it new facts which may have an important value in the analysis of the subject of calculi formed in the human body. By the use of polarized light each type of crystal found in urinary calculi has certain distinguishing physical characteristics which are constant. For example oxalate stones are made up of small octahedrons and appear on section as lance shaped or as spherulites depending on whether the urine is clear or contains blood. Calculi of uric acid have a lamellated structure quite different from the isolated crystal. Calculi of

ammonium-magnesium phosphate are agglomerations of large flat crystals. Crystals are pyro electric, which means that elevations of a fraction of a degree of temperature are sufficient to produce electrical potential at the extremities of the crystal. This type of investigation is interesting but highly technical and its value to the understanding of the pathogenesis of stone will necessitate more research and the critical application of the data furnished.

Charterhouse Rheumatism Clinic Original Papers Volume I. Cloth. Price \$5.25. Pp. 203 with illustrations. New York & London: Oxford University Press, 1937.

This book requires careful study. In order to appreciate it one must have a keen interest in the subject and approach the material contained in the book with a very open mind. It is technical, the apparatus is expensive and the deductions have not been proved. The application of the pathogen selective cultures and sedimentation rate is made to various groups of arthritis and assists in a clearer understanding of the etiology, differential diagnosis, prognosis and therapeutics. The book contains an interesting clinical, radiologic and serologic correlation on spondylitis adolescents. Roentgenography makes the diagnosis on the basis of sacroiliac joint abnormalities long before the symptoms become manifest clinically. This early aid in diagnosis of disabling spinal affliction affords an advance in prophylaxis and therapy. There will be fewer undiagnosed or misdiagnosed early cases. Early treatment by roentgen irradiation, in dosage determined by sedimentation rate tests and clinical progress evaluation by sedimentation rate tests at regular intervals is recommended. The rheumatic patients are divided into ten classes, each of which is discussed individually. The book is divided into three parts: The Pathogen Selective Culture and Its Bearing on the Classification and Etiology of Chronic Rheumatic Disease, by H. Warren Crowe; The Differential Sedimentation Test, by Harry Coke; and Spondylitis Adolescents with Associated Pathological Changes in the Sacroiliac Joints, by S. Gilbert Scott. This is a book for specialists rather than for the general practitioner.

Infantile Paralysis and Cerebral Diplegia: Methods Used for the Restoration of Function By Eltznabeth Kenny. With a foreword by Herbert J. Wilkinson, Professor of Anatomy and Dean of the Faculty of Medicine, University of Queensland. Cloth. Price 21s. 1p. 125 with 45 illustrations. Sydney, Australia: Angus & Robertson Limited, 1937.

This book contains discussions on infantile paralysis and spastic paralysis of infants. The author stresses the importance of restoration of function. In discussing infantile paralysis, she outlines the principles of treatment, apparatus used, treatment of complications, residual paralysis and muscle reeducation. Under the subject of spastic paralysis she discusses the condition as it is found in infants, the apparatus used in treatment, and the principles of treatment and exercises. There is a great deal of valuable information in the book and it is recommended to all those who are concerned with the diagnosis or treatment of persons afflicted with either disease or lesion. The treatment of infantile paralysis is based on the following five principles: (1) maintenance of a bright mental outlook, (2) maintenance of impulse, (3) hydrotherapy and remedial exercises, (4) maintenance of circulation, and (5) avoidance of the generally accepted methods of immobilization. There is an interesting foreword by H. J. Wilkinson, professor of anatomy and dean of the University of Queensland Faculty of Medicine.

Les péricystites Par le Dr. P. Dominici. Paper. Pp. 331 with 31 illustrations. Paris: Joue & Cie, Editeurs, 1937.

Dr. Dominici states in his preface that he has utilized the data included in the two extensive reviews on the subject of pericystitis which have appeared in the last twenty-five years: one by d'Aversenq in 1913 and the other by Paul Delbet in 1921, he has also added the many contributions in the literature bringing it to date, and has included certain material which may have escaped the notice of the two authors cited. The volume is well printed and presents the subject in an orderly and comprehensive manner. It is remarkable for the excellence and clarity of the illustrations, many of which are original. Dominici's work is an important contribution to the literature on pericystitis chiefly on account of its completeness. The bibliography and extensive case reports culled from the litera-

ture permit ready reference to the various categories in which the author has divided his subject. Reference to many American authors is made, especially the work of Clute, Young, Beer and Culver. The book has its chief value as a reference work and affords an encyclopedic exposition of the subject.

The Technic of Local Anesthesia. By Arthur E. Hertzler. M.D. Ph.D. Professor of Surgery in the University of Kansas. Kansas City, Kansas. Sixth edition. Cloth. Price \$5. Pp. 284. St. Louis: C.V. Mosby Company, 1937.

This edition considers the few good anesthetics that are available for local anesthesia, the doses and the methods of their use, the combination of epinephrine with local anesthetics and the combination of local anesthetics and general anesthesia. There is a description of the syringes and needles recommended for this work and various other appliances that are conveniently used for this type of work. The various blocks are described on an anatomic basis, as for example in chapter IV, local anesthesia for operations on the scalp, the cranium and its contents, and in chapter V, local anesthesia for operations on the face, jaw and tongue. In the following chapters local anesthesia is described for operations on the ear and mastoid cells, for trifacial neuralgia and for operations on the fifth cranial nerve, cervical lymph nodes, buccal soft parts, thyroid gland, tonsils, larynx, trachea, mammary gland, thorax, lungs, spinal column and abdomen. Paravertebral and splanchnic anesthesia are dealt with in a chapter as well as sacral and transsacral block anesthesia. There is a special chapter on spinal anesthesia written by Dr. Irene A. Koeneke, and this method is considered in considerable detail. There are further chapters on local anesthesia for operations on inguinal and femoral hernias and also for umbilical, linea alba and scapular hernias, and for operations on the penis, scrotum, urethra, bladder, prostate gland, female organs and rectum, and upper and lower extremities. There is a short chapter on intravenous anesthesia with sodium amytal, which has not been used much clinically as a surgical anesthetic since 1930. The subject of preliminary medication is discussed briefly. This is a useful book for the general surgeon because the author's preference is infiltration of tissue to be incised, which is the most effective method for use by the general surgeon unless he also has been trained in regional methods of anesthesia. There are 142 excellent illustrations.

The Pneumonokonioses (Silicosis). Literature and Laws. Book III. International Abstracts, Extracts and Reviews of the Pneumonokonioses and Their Associated Diseases and Subjects. By George C. Davis. M.D. Associate Clinical Professor of Surgery, Rush Medical College, University of Chicago. Ella M. Salmonsens, Medical Reference Librarian, the John Crerar Library, Chicago, and Joseph L. Earlywine, Attorney at Law, Chicago. Cloth. Price \$8.50. Pp. 1033. Chicago: Chicago Medical Press (Not Inc.), 1937.

Book III is similar in all respects to books I and II which appeared respectively in 1934 and 1935. The present book embraces 701 abstracted articles related to dusty lung diseases all of which appeared in 1935 and 1936. In addition, a small section is devoted to earlier publications overlooked in previous compilations. Such material, together with several indexes make up part I of the present book and represents 900 pages. Part II of this volume presents the occupational disease laws of the United States and some mention of foreign countries. Taken in their entirety, these three books provide the best compilation in the English language of published materials related to dusty lung diseases. Book III is larger than either predecessor, which in part is due to the inclusion of large numbers of nonscientific discussions of dusty lung diseases such as have appeared in lay papers. A few of these items represent abstracts of commercial promotional items in lay publications. The elimination of approximately one third of the abstracts would have made this valuable compilation even more valuable. It is observed that in the text of the entire series the term 'silicosis' appears in parenthesis by the side of the pneumonokonioses. Manifestly, silicosis is not a synonym of the pneumonokonioses, although silicosis is one of the pneumonokonioses. The previous publications in this series have been given favorable reception by physicians, attorneys, engineers and industrial hygienists. There is no reason to believe that this book will prove any less useful or any less popular, even though it appears at a time when dramatic concern in silicosis, so prevalent a few years ago, is now distinctly on the wane.

Soubor prací venovaných Profesoru V. Libenskému na počest jeho šedesátých narozenin. Recueil de travaux dédiés au Prof. V. Libenský en l'honneur de son soixantième anniversaire. Československá lékařská společnost. Number 22, June 7, 1937. Cloth. Pp. 277 with illustrations. Prague: Société Tchécoslovaque de Cardiologie, 1937.

This collection of articles in honor of Prof. Václav Libenský's sixtieth anniversary is presented in book form, divided into two parts. The first part contains sixty-two pages of articles contributed in French and Italian by various foreign authors, the second and larger part presents articles contributed in Czechoslovakian by native authors, each having a French or English summary. The articles are mostly on subjects of internal medicine, the circulatory system being given the preference. The articles are rather short, but all are interesting and written by well known authors.

The Kinesiology of Corrective Exercise. By Gertrude Hawley. M.A. Assistant Director, Women's Gymnasium, Stanford University, California. Cloth. Price \$2.75. Pp. 268 with 107 illustrations. Philadelphia: Lea & Febiger, 1937.

Active exercise, because of its wide applicability and its importance in developing the body to the highest possible mechanical efficiency, probably should be given first place in the many agents used in physical therapy. This small volume, which is intended for students, teachers and physical therapists specializing in the field of corrective exercise, is a practical textbook on kinesiology. The exercise treatment of infantile paralysis, spastic paralysis and fractures is not discussed, but it does give exercises suitable for use in any corrective or remedial physical education department where a reasonable amount of personal supervision can be given by the instructor. It can be recommended to teachers interested in this branch of physical education.

Quantitative Pharmaceutical Chemistry Containing Theory and Practice of Quantitative Analysis Applied to Pharmacy. By Glenn L. Jenkins. Ph.D. Professor of Pharmaceutical Chemistry, College of Pharmacy, University of Minnesota, and Andrew C. DuMez. Ph.D. Professor of Pharmacy and Dean of the School of Pharmacy, University of Maryland. Second edition. Cloth. Price \$3.50. Pp. 466 with 67 illustrations. New York & London: McGraw-Hill Book Company, Inc., 1937.

This book covers both general and physical methods used in official pharmaceutical analysis as directed by the United States Pharmacopeia and the National Formulary and aims to develop a logical explanation for the various steps in the analysis as well as presenting questions and problems which are intended to develop the student's reasoning capacity. The first chapter is an excellent introduction to general chemical analytical methods, including simple statistical presentation of results and presentations of such calculations as probable error, gravimetric methods applied to official substances, volumetric analysis, alkalimetry, acidimetry, precipitation methods, oxidation and reduction methods and gasometric methods. Part II is devoted to an exposition of physicochemical methods used in official assaying. In part III, special methods such as ash and moisture determinations, extractive and crude fiber content and analyses of drugs for proximate principles are taken up. This book bears the stamp of many years of experience in teaching and should be a welcome laboratory manual, most especially for students in colleges of pharmacy.

Aids to Physiology. By Henry Dryden. Ph.D. M.R.C.S. L.R.C.P. Professor of Physiology, Royal (Dick) Veterinary College, Edinburgh. Second edition. Cloth. Price \$1.25. Pp. 295 with 63 illustrations. Baltimore: William Wood & Company, 1937.

A book for the rapid reviewing of facts in a science is occasionally an aid to a candidate for an examination but is ordinarily useless for study. This book is reasonably accurate and is well composed. It is essentially a dictionary arranged under the conventional headings of the physiologic and anatomic subdivisions of the body. All aspects of the subject are covered, but in brief and dogmatic form. One defect in such a work is that the reader has no way of knowing which of the statements are well substantiated and which are not. In physiology today many qualifications must be made and questions left unanswered because of inadequate knowledge. It would be highly undesirable to recommend this work as a student's textbook.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Malpractice Failure to Observe Symptoms of Eclampsia—The plaintiff, as administrator of the estate of his deceased wife, sued the Columbia Clinic, Inc., and Dr Hackett, an employee of the clinic, attributing the death of his wife to their negligence. The jury returned a verdict against the clinic but for Dr Hackett, and the clinic appealed to the Supreme Court of Washington.

The Columbia Clinic, Inc., was a corporation operating a hospital in the city of Longview with the usual staff of physicians, nurses and attendants. The plaintiff, an employee of a company operating in the vicinity, had a "family contract" for the medical care and hospital treatment of the members of his family by the Columbia Clinic, Inc. April 21, 1934, he and his wife went to the hospital, saw Dr Hackett and advised him that the plaintiff's wife was pregnant and expected to be confined in about a month. Dr Hackett apparently made the usual examination and inquired into the facts of the case and the family history of the expectant mother. He gave directions as to how the patient should conduct herself and asked her to bring in for examination, at intervals, specimens of her urine. According to the physician's testimony, the condition of the patient at that time was normal. Samples of urine were brought in on two later occasions which Dr Hackett testified indicated a normal condition. The patient was taken to the hospital about 5 o'clock on the morning of May 28 and placed in the care of a nurse then in charge, and Dr Hackett was notified of her arrival. He did not go to the hospital until about 8 30 and did not then see the patient. He did, on his arrival at the hospital, look at the hospital chart, which, he testified, showed that the case was progressing with normal labor. Later, Dr Hackett found that his services as a surgeon were required in a case involving severe injuries and asked another member of the hospital staff, a Dr Clark, who specialized in obstetric cases, to take care of the patient. Dr Clark did not see the patient until 11 45 a. m. He then made what the record refers to as a cursory examination and concluded that the patient was normal and that the case was proceeding normally. At 1 40 p. m. Dr Clark again saw the patient made a further examination and again concluded that everything was progressing normally. At that time he expected delivery within two hours. About 2 o'clock the patient suffered a convulsion and Dr Clark was immediately called and found her in a comatose condition. She was rushed to the delivery room and the baby was delivered within fifteen minutes by the use of forceps. The patient was then taken to the maternity ward and put to bed. The nurse there in charge was informed of what had taken place and was told to watch the patient and to advise Dr Clark of developments.

Dr Clark saw the patient later in the afternoon and, as he testified, "talked to her, asked her how she was, turned around and came out again." Dr Hackett looked in to see the patient in midafternoon and both Dr Hackett and Dr Clark visited her at about 6 p. m. At neither time, according to their testimony, did either see anything wrong and no treatment was ordered except that which is given in a normal case. Beginning about 7 o'clock in the evening the patient again had convulsions and from that point on it seems to be conceded that she received proper treatment, notwithstanding which in a few hours she died. It was the plaintiff's theory that certain symptoms were present when Dr Hackett first examined the patient which indicated at that time the presence, or the prospective presence of eclampsia. Lay witnesses testified that such symptoms were then present but Dr Hackett testified to the contrary. Medical testimony was introduced to the effect that eclampsia being present or there being present the symptoms from which it may be expected that it will develop, there is a known treatment which should be at once applied and which, when applied will greatly lessen the probability of a fatal ending. No such treatment was given to the patient until after she again had convulsions at 7 o'clock in the evening, after the birth of her child.

Dr Hackett did not treat the patient after she came to the hospital but turned the case over to Dr Clark. There was therefore, the court said, a wide open opportunity for the jury to find that Dr Hackett was not negligent but that the nurse who received the patient at the hospital was negligent in not discovering the symptoms of eclampsia and recording them on the hospital chart so that Dr Hackett, when he read the chart might have ordered the proper and necessary treatment. The symptoms of eclampsia are such, the court said, as should be observed by a nurse even though she might not know what was indicated thereby. Furthermore, the jury might have found that Dr Clark was negligent in one or more of several ways (1) by his failure to see the patient until 11 45 a. m., more than six hours after her arrival at the hospital and at least two or three hours after the case had been turned over to him by Dr Hackett, (2) by not then discovering the symptoms of eclampsia and ordering the proper treatment and (3) by his failure to discover the symptoms at the time of the delivery of the baby or subsequently during the afternoon and then ordering a treatment which would probably have prevented the development of eclampsia and the return of the convulsions. There was evidence, also, from which the jury could have found that the nurse in the maternity ward was negligent in not keeping a closer watch over the patient during the hours following delivery and in not observing and calling attention to the symptoms then present. It seems clear, the court said, from these facts that the jury could, as it did exonerate Dr Hackett and yet, by finding negligence on the part of some other employee of the clinic, render a verdict against it. The charge and the proof was such as to permit the jury to find any one or more of four employees to be guilty and a verdict in favor of the employee who was made a party is not a finding that another or other employees, not parties, were not guilty.

The judgment of the trial court, therefore against the clinic was affirmed—*Hansch v Hackett et al (Hansch)*, 66 P (2d) 1129.

Workmen's Compensation Acts Diabetic Gangrene Precipitated by Trauma—The petitioner, a night watchman at the building of the defendant trust company, was afflicted with diabetes, though apparently he did not know it at the time of the accident. While he was making one of his rounds he stubbed a toe on which there was a callous area against a chair. He at once felt acute pain in the toe, which increased during the course of the night. The following morning he was taken to a hospital dispensary and reported to the physician there that he had stubbed his toe against a chair. Two days later when he returned to the hospital diabetes was suspected and an examination of the urine confirmed that suspicion. Signs of incipient gangrene were then observed. From this point the case progressed to an amputation of the leg below the knee. The petitioner instituted proceedings under the workmen's compensation act of New Jersey and obtained an award. This award was affirmed by the court of common pleas, Passaic County and the trust company brought certiorari to the supreme court of New Jersey.

In the opinion of the supreme court, the evidence tended to show that an accident in the course of employment and arising out of it was a substantial contributing cause of the disability sustained by the petitioner. The inference was entirely reasonable from the testimony that the accident incited a tendency to gangrene existing because of the diabetic condition of the petitioner. The award was therefore affirmed—*Cahill Franklin Trust Co (N J)* 191 A 748.

Society Proceedings

COMING MEETINGS

- American Academy of Orthopedic Surgeons Los Angeles Jan 16-20
- Dr Carl E. Badgley 1313 East Ann St. Ann Arbor Mich. Secretary
- American Student Health Association Chicago Dec 30-31 Miss Ruth L. Boynton University of Minnesota Medical School Minneapolis Secretary
- Puerto Rico Medical Association of Santurce Dec 17-19 Dr M. F. J. Avenue Fernandez Juncos 19 Santurce Secretary
- Society of American Bacteriologists Washington D. C. Dec 27-29
- Dr I. I. Baldwin College of Agriculture University of Wisconsin Madison Wis. Secretary

Current Medical Literature

AMERICAN

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American Journal of Diseases of Children, Chicago

54 973 1210 (Nov.) 1937

- Comparative Study of Immunization E B Shaw San Francisco—p 973
- Present Status of Preventive Inoculations Against Whooping Cough L Sauer Evaoston Ill—p 979
- Acute Anterior Poliomyelitis in New York in 1935 Review of 686 Cases A E Fischer and M Stillerman New York—p 984
- Blood Sugar in Diabetes in Children A H Kantrow Brooklyn and J D Boyd Iowa City—p 1005
- Sympathetic Innervation of External Sphincter of Human Bladder P C Bucy C Huggins and D N Buchanan Chicago—p 1012
- New Tuberculin Patch Test H Vollmer New York and Esther W Goldberger Staten Island N Y—p 1019
- Mineral Composition of Bone and Cartilage of Human Fetus W W Swanson and L V Iob Chicago—p 1025
- Respiratory Metabolism in Infancy and in Childhood \ \ Nitrogen Metabolism in Premature Infants—Comparative Studies of Human Milk and Cow's Milk H H Gordon S Z Levine M A Wheatley and E Marples New York—p 1030
- Circulatory Collapse in Diphtheria C W Edmunds Ann Arbor Mich—p 1066

Blood Sugar in Diabetes in Children—Kantrow and Boyd investigated the nocturnal fluctuations of the blood sugar level of diabetic children the blood sugar level in the early morning hours after awakening but before the ingestion of food or the administration of insulin, and the response to standardized doses of insulin unaccompanied by food. In all 299 separate tests were completed, 207 with diabetic and ninety-two with nondiabetic subjects. Since the blood sugar level of the diabetic subject reacts at a different tempo from that of the nondiabetic subject, an insulin tolerance test may prove as valuable a means of diagnosing the presence of diabetes as is the dextrose tolerance test. The hyperglycemia of hyperthyroidism may be distinguished from that of diabetes in this manner. The test as performed consists of the administration of one fourth unit of insulin per kilogram of body weight and the determination of the blood sugar level before and at four half hour intervals subsequently. The maximal reduction in the nondiabetic subject is observed within the first half hour whereas in the diabetic subject the fall is prolonged into the second or third half hour or longer. This peculiarity of response seems inherent in the diabetic organism and is not determined by the initial blood sugar level nor is there evidence that the nature of the response is altered by treatment of the disease.

New Tuberculin Patch Test—Vollmer and Goldberger describe a new patch test, which has the advantage of simplicity over other tuberculin tests. Thin filter paper is saturated with tuberculin suspended in the air in a room free from dust and allowed to dry. This saturated filter paper when dry can be kept indefinitely. The paper is cut into 0.8 cm squares and placed on adhesive tape with forceps. Three types of plasters are prepared in this way: (1) plasters equipped with old tuberculin, (2) plasters containing old tuberculin and bouillon control and (3) plasters containing old tuberculin control material and bovine tuberculin. The distance between these squares must be at least 1 cm. When more than one square is used each square is distinguished by a specific letter on the back of the plaster. The adhesive side of the plaster can be protected with stiff gauze. By the natural moisture of the skin this tuberculin is liquefied sufficiently to cause a cutaneous reaction. In spite of this dilution by moisture the tuberculin remains sufficiently concentrated to cause a reliable cutaneous reaction. The control square does not cause an inflammatory reaction. However, a sensitive skin may occasionally give a

nonspecific irritative reaction caused by the adhesive plaster. Therefore it is always best to use a control square. In carrying out the test the skin is cleansed with ether or benzene and the plaster, from which the gauze has been removed, is placed securely on the skin. After twenty-four hours the reaction was read. The results were more reliable when the plaster was left on for forty-eight hours. The reaction may be read immediately after removal or twenty-four hours later, at which time possible nonspecific skin reactions have disappeared and the tuberculin reaction is intensified. When positive, the reaction appears as a sharply defined, indurated, reddened square, with lichenoid, follicular elevations on the skin. Reactions are usually cleared when the plaster is put lengthwise on the sternum or transversely over the upper edge of the trapezius muscle. This eliminates spreading of the tuberculin as the result of folds in the skin. The reliability of the test can be seen in that 187 of 209 tuberculous children or 89.5 per cent showed a conformity between the results of the Pirquet test and those of the present patch test. The results that did not correspond were in fifteen children who showed a negative reaction to the Pirquet test and a positive reaction to the patch test and in seven children who showed a positive reaction to the Pirquet test and a negative reaction to the patch test. The fundamental principle of the tuberculin patch test with saturated filter paper proved, after modification, to be fit also for an allergy patch test.

American Journal of Medical Sciences, Philadelphia

194 597 748 (Nov.) 1937

- Röntgen Therapy of Active Rheumatic Heart Disease Summary of Eleven Years Experience R L Levy and R Golden New York—p 597
- Clinical Observations on Dynamics of Ventricular Systole IV Pulsus Alternans L N Katz Chicago and H S Feil Cleveland—p 601
- Suppurative Pleuritis Complicating Pulmonary Infarction in Congestive Heart Failure I Steinberg E Clark and C E de la Chapelle New York—p 610
- Observations on Etiologic Relationship of Achylia Gastrica to Pernicious Anemia VI Site of Interaction of Food (Extrinsic) and Gastric (Intrinsic) Factors Failure of In Vitro Incubation to Produce a Thermolabile Hematopoietic Principle W B Castle C W Heath M B Strauss and R W Heinle Boston—p 618
- Etiology and Treatment of Idiopathic Hypochromic Anemia W M Fowler and Adelaide P Brer Iowa City—p 625
- *Studies on Anemia of Chronic Glomerulonephritis and Its Relationship to Gastric Acidity S R Townsend E Massie and R H Lyons Boston—p 636
- *Deficiency Syndromes Associated with Chronic Alcoholism Clinical Study J Romano Denver—p 645
- Case Finding in Tuberculosis an Adult Problem H R Edwards New York—p 652
- Diagnostic Importance of Tongue in Internal Medicine B I Comroe Philadelphia—p 661
- Loss of Body Heat and Disease W Yandauer Storrs Conn—p 667
- Calcium Ion Concentration of Serum in Allergic Diseases W B Sherman and Mary Glidden New York—p 674
- Survey of Undulant Fever and Bang's Disease in the United States L Gershensfeld and D C A Butts Philadelphia—p 678
- Convalescence with Especial Reference to the Philadelphia Area J H Cloud Ardmore Pa—p 684
- Causative Factors in Production of Laennec's Cirrhosis with Especial Reference to Syphilis G A Schumacher Philadelphia—p 693
- Leiomyoma of Small Intestine Report of Case with Fatal Hemorrhage O A Smith Philadelphia—p 700
- Studies of Myohemoglobin at High Altitudes A Hurtado A Rotta C Merino and I Pons Lima Peru—p 708

Relation of Anemia of Chronic Glomerulonephritis to Gastric Acidity—Since previous studies on the anemia of nephritis have failed to utilize more accurate methods Townsend and his associates felt that the application of the hematologic technique to their patients would enable them to classify their anemias more definitely, might give some clue toward the recognition of the fundamental defect present in the anemia of nephritis and possibly suggest a more efficacious treatment, and that an assessment of the gastric acidity might disclose some correlation between the developing anemia, nitrogen retention and diminishing gastric acidity. The refractory nature of the anemia to iron therapy has always been a puzzling one and suggests that such medication may fail because of a disturbed gastric secretion. Their observations on the character of the red blood cell in the anemia of chronic glomerulonephritis permit them to classify the anemia as one of the normocytic variety, but in some of the individual cases the

hemoglobin content is slightly lower than that commonly associated with this type of anemia. A deficient supply of erythrocytic building material might be considered the possible explanation for this type of picture. It is common knowledge that the anemia of chronic glomerulonephritis does not respond to iron, and the slightly lower hemoglobin found in the individual red cell is probably of significance and compatible with the thought that the anemia is due to a deficiency of blood cell forming material. Studies on the gastric acidity tend to support this view. The most important features in the anemia of chronic glomerulonephritis is the diminished or absent hydrochloric acid in the gastric secretion, and this diminution must play an important part in the improper digestive processes and improper absorption of food and iron. The investigations indicate that there is a correlation between the decreased renal function, the development of a normocytic anemia and the development of a low to absent secretion of free hydrochloric acid. The low gastric acidity, by interfering with the proper metabolism of ingested food and the absorption of iron, indirectly produces a deficiency of "building material" for sufficient red blood cell formation and the production of hemoglobin.

Deficiency Syndromes Associated with Chronic Alcoholism—Physical, neurologic and psychiatric examinations were carried out in 131 cases of chronic alcoholism. Romano paid particular attention to the dietary history, presence or absence of polyneuritis, anemia and clinical response to vitamin B therapy. The age period between 30 and 50 contained more than 64 per cent of the 131 patients, sixteen were women. Eleven of the women and sixty-four of the men had some qualitative inadequacy in their diets for varying periods previous to admission. Of the seventy-seven patients who showed evidence of some form of neuritis, sixty-one gave a history of inadequate diets. Ten of the female patients and sixty-seven of the male patients suffered from some degree of peripheral neural involvement. Eleven of the women and sixty-four of the men suffered from some degree of anemia, although fifty-six of the total number of patients with some degree of anemia had only mild involvement. Of the nineteen patients who had moderate or severe anemia, six had macrocytosis as revealed by increased cell diameter and volume index. Iron and ammonium citrate in large daily doses (from 4 to 8 Gm) together with parenteral liver were successful in treating the anemias. Every patient with mild moderate or severe peripheral neural involvement was placed on a high caloric high vitamin diet (from 4000 to 5000 calories daily) the quantity of protein obtained from lean meat being increased and the carbohydrate decreased. This diet was supplemented with dried brewers' yeast tablets (4 Gm daily) wheat germ preparations (from 30 to 60 Gm daily) and either vitamin B₁ or preparations of liver given parenterally in daily doses. In addition to this, fresh orange or tomato juice together with various preparations of cod or halibut liver oil were given. Of the seventy-seven patients with neuritis, five failed to respond to vitamin therapy, forty-seven showed partial improvement and twenty-five showed complete improvement with specific therapy during their period of hospitalization (average 24.67 days).

American Journal of Orthopsychiatry, Menasha, Wis 7 441 550 (Oct) 1937

- Study of Basal Age with Reference to Its Meaning for School Adjustment I S Wile and Rose Davis New York—p 441
Fairy Tales Lilliputian Dreams and Neurosis S Lorand New York—p 456
A Case of Delinquency P Sloane and Vivian Lane Allentown Pa—p 465
Treatment Possibilities Offered by the Summer Camp as Supplement to the Child Guidance Clinic J Galkin New York—p 474
Emotional and Biologic Factors Involved in Learning Processes E Liss New York—p 483
Crewwork with Adolescents Who Have Run Afoul of the Law Susan Burlingham Philadelphia—p 489
Reaction of Children to Sexual Relations with Adults Lauretta Bender and A Blau New York—p 500
Effect of Benzidine Sulfate on Children Taking the New Stanford Achievement Test M Moltich and J P Sullivan Jamesburg N J—p 519
The Use of the Play Situation as an Aid to Diagnosis Case Report P Holmer Reading Pa—p 523
Sociologic and Psychiatric Interview Compared W C Reckless and L S Selling Detroit—p 532

American Journal of Physiology, Baltimore

120 423 648 (Nov) 1937 Partial Index

- Blood Sugar Recovery from Insulin Hypoglycemia After Section of Splanchnic Nerves B N Berg and T F Zucker with assistance of H B Colman and Helen Blodgett New York—p 435
Epinephrine Output from Adrenal Glands in Experimental Diabetes J M Rogoff and E Nola Nixon Chicago—p 440
Significance of Subnormal Respiratory Quotient Values Induced by Controlled Feeding in the Rat Werthessen Cambridge Mass—p 4
Ovarian Weight Responses to Menopausal Urine Injections in Normal Hypophysectomized and Hypophysectomized Thyroxine-Treated Intact Rats H H Tyndale and L Levin New York—p 486
Reversible Inhibition of Muscle Glycolysis C L Gemmill and L Heilman Baltimore—p 522
Insulin and Gastric Motility J Lalich W B Youmans and W J Meek Madison Wis—p 554
*Electroencephalogram of Schizophrenics During Insulin Hypoglycemia and Recovery H Hoagland M A Rubin and D E Cameron Worcester Mass—p 559
Analysis of Chronotropic Function of Cardiac Vagus Nerves A S Gilson Jr, St Louis—p 571
Respiratory Quotient and Carbohydrate Metabolism Following Injection of Glucose and of Fructose as Affected by Exercise Taken Immediately and Thirty Minutes After Ingestion G Bachmann J Hald W Wynn and C Ensor Emory University Ga—p 579
Experimental Analysis of Centripetal Visceral Pathways Based on Visceropannic Reflex D M Ashkenaz Philadelphia—p 587
Effect of Thyrotropic Hormone Combined with Small Amounts of Iodine on Function of Thyroid Gland Evelyn M Anderson and H M Evans Berkeley and San Francisco—p 597
Acid Inhibition and Cephalic (Psychic) Phase of Gastric Secretion C M Wilhelmj H H McCarthy and T C Hill Omaha—p 619

Electroencephalogram in Schizophrenia During Insulin Hypoglycemia—Hoagland and his associates made electroencephalographic records during thirty-five insulin treatments of six schizophrenic patients. Electrical brain waves after large doses of insulin show a progressive decline in the frequency of the alpha wave (Berger rhythm) of some 40 per cent, which parallels with a time lag of some minutes (about thirty) the declining blood sugar curve. Sugar injected during coma restores the frequency along a smooth curve. The present data along with other evidence, are in accordance with the view that alpha frequencies are directly proportional to the rate of carbohydrate metabolism of the cortical cells producing the rhythm.

Am J Roentgenol & Rad Therapy, Springfield, Ill 38 533 676 (Oct) 1937

- Roentgenologic Aspects of Chronic Gastritis Critical Analysis A Ansprenger and B R Kirklin Rochester Minn—p 533
Exploration of Biliary Ducts by Cholangiography During and Follow-up Operation H B Hunt N F Hicken and R R Best Omaha—p 542
*A Safe Method for the Roentgen Demonstration of Bleeding Duodenal Ulcers A O Hampton Boston—p 565
Roentgenographic Demonstration of Method of Speech in Cases of Complete Laryngectomy G R Brighton and W H Boone New York—p 571
Lesions of the Diaphragm E L Jenkinson and E W Roberts Chicago—p 584
Roentgenologic Considerations in Infant Mastoiditis C F Crum Corpus Christi Texas—p 592
Urographic Pyelolympatic Backflow M F Campbell New York and V B Seidler Montclair N J—p 602
Pelvimetry by Stereoroentgenometry C R Johnson Whittier Calif—p 607
*Treatment of Roentgen Sickness with Synthetic Vitamin B₁₂ Hydrochloride Preliminary Report C L Martin and W H Mour Jr Dallas Texas—p 620
A Portable Low Intensity High Voltage Roentgen Therapy Unit I I Kaplan and S Rubenfeld New York—p 625
The Educational Advantages of the Tumor Clinic G M Darrac Philadelphia—p 636

Roentgen Demonstration of Bleeding Duodenal Ulcers—Hampton describes a method for the demonstration of dangerously bleeding duodenal ulcers. It permits profile, direct and double contrast examination of the posterior wall of the stomach, the pyloric valve and the posterior wall of the duodenum. The entire examination is done with the patient in a horizontal position when compression or palpation is contraindicated or impossible. The equipment necessary for the examination consists of a horizontal roentgenoscope and a quick change over switch, which will allow the taking of films rapidly during roentgenoscopic observations. The patient should be shifted from the hospital truck to the roentgenoscope table on a stretcher. The barium suspension must be prepared carefully. An electrical mixer is recommended. There are certain already prepared barium mixtures on the market which can be used.

The author uses by volume 4 ounces of plain barium sulfate, 3 ounces of water and 1 teaspoonful of liquid petrolatum with agar. More barium can be added by the addition of liquid petrolatum with agar without increasing the viscosity of the mixture. The mixture should be freshly made and of about the consistency heavy cream. After the patient has ingested the barium meal as he lies on his back, he is rotated toward his right side and allowed to remain in this position under roentgenoscopic observation until the first part of the duodenum has filled and emptied two or three times. Then when the duodenum is completely filled he is promptly returned to the face-up position and rotated more to the left side until the pyloric valve and first portion of the duodenum are seen in profile. Roentgenograms are taken with the roentgenoscopic tube immediately while the duodenum is still filled and when abnormalities are noted, but it is when the patient is lying face up slightly rotated to the left, that the best examination of the duodenum is obtained. The inner relief of the posterior wall of the duodenum can be visualized by taking films after the duodenum has emptied. Thick barium will adhere to the duodenal mucosa and by the force of gravity will remain in such ulcerous craters as are present. The double contrast examination is then done. There is usually a gas bubble present in the stomach, but if there isn't the patient should be instructed to swallow four or five times. When the fundus gas bubble is in the antrum, pyloric valve and duodenum films are taken for double contrast examination. This allows a study of the gastric and duodenal relief exactly as is obtained by the double contrast enema.

Treatment of X-Ray Sickness with Vitamin B₁ Hydrochloride—Martin and Moursund observed that in animals deprived of vitamin B₁ symptoms similar to those seen in x-ray intoxication develop. The four major points of similarity are loss of appetite, changes in intestinal motility and tonus, changes in the mucous membranes of the gastro-intestinal tract and alteration of the sugar metabolism. For more than six months, patients with x-ray sickness have been treated with oral or intramuscular injection of vitamin B₁ hydrochloride and the clinical results were most striking. A series of animal (gunea pig) experiments has been carried out in an effort to establish a sound basis for the use of this preparation. The experimental results support the use of vitamin B₁ in the treatment of x-ray sickness.

American Journal of Surgery, New York

38 227 458 (Nov.) 1937

- Malignancies of Rectum and Rectosigmoid C G Heyd New York—p 230
- *New Method in the Use of Radon Gold Seeds F Hames New York—p 235
- Postoperative Complications Following Suprapubic Prostatectomy and Their Prevention M Muschat Philadelphia—p 239
- Minor Enlargement of Prostate E W Hirsch Chicago—p 248
- Roentgen Diagnosis of Diaphragmatic Hernia A S Unger and M H Poppel New York—p 251
- A Method for Reducing the Postoperative Morbidity of Cholecystectomy T B Noble Jr Indianapolis—p 259
- Postoperative Study of Peptic Ulcer B M Bernstein D Diamond and J Zaslow Brooklyn—p 266
- Acute Appendicitis in Children F Angel E Angel and A Kizinski Franklin N C—p 268
- Hyperparathyroidism: Diagnosis and Treatment J E Jacobs and J D Bisgard Omaha—p 272
- 14 Collected Cases J E Jacobs and J D Bisgard Omaha—p 286
- Surgical Treatment of Pendulous Hypertrophic Breast P Posse Buenos Aires Argentina—p 293
- *Ingrown Toenail: Clinical Study C J Heifetz St Louis—p 298
- Venous Thrombosis in Lower Limbs: Its Relation to Pulmonary Embolism J Homans Boston—p 316
- Osteomyelitis in Compound Fractures R H Kennedy New York—p 327
- Reconstruction Operation for Comminuted Fracture of Upper Third of the Ulna L V Rush and H L Rush Meriden Conn—p 332
- Treatment of Distention by Continuous Duodenal Suction M S Weinberg New York—p 334
- Rectal Excision as Complete Anesthesia: Clinical Observations on 200 Cases Preliminary Report H Hogan New York—p 340
- Antisepsis and Wound Healing W W Sager E B Vedder and C Roenbergh Washington D C—p 348
- Intestinal Resection by a Single Clamp Method N N Ssamramin Lenin grad U S S R—p 351

New Method in Use of Radon Gold Seeds—To overcome the limited mobility of the treated part during the use of needles containing radon or radium, the inability of disposing of saliva and consequent pulmonary complications when platinum

needles are used in and around the oral cavity and the possible inaccurate placement of platinum needles, Hames outlines a radon suture method which consists in the placing of radon seeds within the lumen of a specially made silk carrier. The spacing between openings into which the radon is placed can be varied at will. Those that he used in his cases were all placed 1 cm apart. The usual filtration of 0.3 mm of gold has been employed, but this may be increased as desired. After the radon seeds are placed in the body of the woven silk material, they are permanently sealed in place by the closure of the woven structure and also by a plastic substance containing carmine as an indicator of the area in the suture in which the radon is situated. The spaces between the implants are filled with silk, so that there is a uniform diameter of the suture material throughout its length. On one end of the suture is a small, permanently attached metal collar. The distal end of this collar is threaded to receive the needle of whatever type may be desired. The needle is threaded at one end in order to permit its being screwed into the metal collar. The needle is passed through the tissue around or beneath the area to be treated and the proper placement of the suture is guided by the red markings indicating the point of radon activity. After the suture is so placed, a glass bead is threaded over either end and brought to rest against the tissue. Above this bead a lead shot is fixed to hold the material in place until such time as its removal is desired. In removing the device the suture is cut below the fixed bead and withdrawn in a manner similar to that used in removing an ordinary cutaneous suture or capillary drain. When it is unnecessary or impossible to use a needle, the radon loaded suture may be packed into the cavity—as the antrum or the uterus—after being attached to the usual packing gauze, and its removal readily accomplished by removing the packing. The method provides a means of using radon by the average surgeon, who may be distant from the source of supply of radium and radon.

Ingrown Toenail—Heifetz summarizes the present status of the subject of ingrown toenail and presents a routine of treatment which he has used for several years. The main underlying causes of ingrown toenail are ill fitting footwear and improper cutting of the nails. The use of cotton packing, if properly applied, is one of the simplest effective means of conservative treatment. Radical operation is simplified in the method of Winograd, which the author uses with modifications in certain cases. From three to five days before operation depending on the infection present, the patient soaks and cleanses his foot in warm water (110 F) for an hour twice a day. The operative field is made bloodless by the application of a tourniquet. From 3 to 4 cc of a 2 per cent solution of procaine hydrochloride is injected on each side of the toe at different sites. An incision three eighths inch long is made in the eponychium and proximal wall of the nail, extending slightly diagonally laterally from a point on the nail corresponding to the line on which the nail will presently be excised. This is made deep enough to strike the root of the nail. Medial and lateral flaps are dissected along this line so as to expose at least the lateral third of the root of the nail on that side. The lateral flap should also include sufficient tissue so as to expose the embedded edge of the nail. A small thin flat spatula similar to the Bollenger-Hajek nasal elevator is inserted beneath the free border to the nail between the plate and the bed of the nail along the line where the nail is to be cut, and, hugging the undersurface of the nail, is pushed proximally until it emerges in the incision proximal to the root of the nail. This spatula is then worked laterally until it lifts the involved portion of the nail from its bed. The freed involved portion of the nail is excised along a straight line, exposing the bed of the nail, and, proximally, the matrix on that side. By means of a sharp small bone curet the exposed matrix is completely curetted away. The wound is thoroughly swabbed with a cotton applicator soaked in 95 per cent phenol, and then with alcohol. This is done to destroy any fragment of matrix that may have become implanted in the wound. If considerable infection is present a small wick of iodoform gauze may be inserted under the flaps. No special closure of the wound is necessary. The flaps will fall back into place themselves and any dead space will be eliminated by the application of a tight dressing. The wound is first covered by a layer or two of

petrolatum gauze, snugly encircling the terminal phalanx. A few small pieces of plain gauze are then similarly applied, and several turns of a roller bandage made. The tourniquet is cut, starting considerable fresh bleeding, but this is promptly controlled by completing the bandage. On the day following operation, the patient wears a cut-out shoe and is permitted to walk and resume as much of his normal occupation as he desires. On the second day after operation he returns for his first dressing, at which time the blood encrusted dressings are removed, if a drain has been inserted, it too is removed, a smaller petrolatum gauze dressing is then applied. On the sixth or seventh postoperative day, when healing has well progressed, two or three 2 by 0.5 cm strips of adhesive tape are applied directly to the wound in such a way as to pull the lateral flap in the direction of the cut edge of the nail. A small dry dressing is applied over this. Thereafter, dressings of adhesive tape are applied every three or four days until complete healing has occurred. Beginning about the eighth day, the patient makes a daily attempt to wear his regular shoe. Twenty-nine operations were performed on twenty patients in accordance with the described technique. All were followed for at least six months, some as long as eighteen months. There was a complete and satisfactory cure in all.

Rectal Evipal as Complete Anesthesia—Hogan reports observations on 200 patients given rectal evipal as a complete anesthesia. The depth of anesthesia is easily controlled by means of metrazol. Postoperative pulmonary complications have been markedly reduced in his hospital since the introduction of the technique. Postoperative distress has decreased and hospitalization of the patient has been reduced by from one to three days. In some cases the relaxation in the abdomen has not been satisfactory and it is his belief that the addition of a small amount of ether in oil to the rectal evipal will eliminate this factor. Clinical observations along these lines are proceeding.

Am J Syphilis, Gonorrhea and Ven Dis, St Louis

21 593 736 (Nov.) 1937

- *Criteria of Cure of Gonococcal Infections in Women. L. R. Wharton. Baltimore—p. 593.
- Treatment of Syphilis with Hyperpyrexia with Observations on Prognosis of Optic Atrophy. F. R. Menagh. Detroit—p. 609.
- Inability to Cultivate Virus of Lymphogranuloma Venereum on Chick Membrane. R. B. Dienst, E. S. Sanderson and R. B. Greenblatt. Augusta, Ga.—p. 622.
- Studies in Cardiovascular Syphilis. IV. Influence of Treatment of Early Syphilis on Incidence of Cardiovascular Syphilis. J. E. Kemp and K. D. Cochem. Chicago—I—p. 625.
- Administration Location, Policy, Management, Physical Equipment and Personnel Standard of a Syphilis Clinic. R. S. Dixon. Detroit—I—p. 634.
- Treatment of Syphilis with Mapharsen. J. W. Marshall. Portland, Ore.—p. 645.
- Accidental Transmission of Syphilis by Blood Transfusion. J. V. Klauder. Philadelphia and T. Butterworth. Reading, Pa.—p. 652.
- *Use of Ducrey Vaccine in Diagnosis. Anna Dean Dulaney. Memphis, Tenn.—p. 667.
- Toxic Effects of Bismuth with Especial Reference to Renal Damage. Report of Case of Anuria. A. C. Eitzen. Hillsboro, Kan.—p. 674.
- Suggested Specifications for Bismuth Subsalicylate in Oil. W. F. Reindollar. Baltimore—p. 679.
- A Syphilis Nomenclature for Diagnosis Files in Clinics and Hospital. J. E. Moore and P. Padgett. Baltimore—p. 68.

Cure of Gonococcal Infections in Women—In order to find a basis for the criteria of cure in gonorrhea Wharton followed up his seventy-six private patients that he treated in the last ten years. There were twenty-one cases in children, thirty-three cases in adult women treated without operation and twenty-two cases also in adult women receiving radical treatment. In gonorrheal vaginitis of children, his criterion of cure is complete absence of gonococci in smears for approximately six consecutive months, the smears being taken at least once a month. Gonococcal vaginitis in children can be completely and permanently cured and it can be determined whether a child has been rendered noninfectious. The first criterion is a long observation of these patients through the various stages and final localization of the disease and the knowledge that the infected foci have been either excised surgically or destroyed completely by the actual cautery. The other criteria are repeated follow up examinations with negative observations for one year, repeated negative smears and continuously negative history of infection both personal and marital. The com-

plement fixation test may eventually deserve to be included among the criteria of cure. There is no single, simple cast test which will infallibly indicate the presence or absence of gonorrhea. Approximately 90 per cent of the author's patients are well. Some have married and borne healthy children without any infection in either the husband or wife. Therefore gonorrhea in women can be cured and there are reliable criteria of cure.

Use of Ducrey Vaccine in Diagnosis—Dulaney presents the results of 260 skin tests on 125 individuals, from which it is seen that an easily demonstrated allergy is present in persons infected with *Haemophilus ducreyi* and that a positive cutaneous reaction is indicative of present or past infection. In fifty patients showing lesions that were clinically chancroid positive reactions were obtained in forty-six. Two of the negative results were given by patients in the early stages of the disease who had not developed buboes, and it is accepted that such involvement increases cutaneous reactivity. Two patients with typical lesions of the surface and buboes failed to react to either the Ducrey or the Frei antigen. Cutaneous sensitivity is demonstrable early in the disease, as early as ten days (patient's history) after the appearance of the ulcer but in most cases allergy manifests itself at a later date. The reaction increases in intensity with time. Cutaneous sensitivity, once developed is very lasting and must always be remembered in practical use of the test. While both chancroidal pus and bacillary antigens may be used for cutaneous testing purposes, the latter elicits much more definite reactions. It also affords a method of standardizing such a diagnostic procedure. The high incidence of coexisting venereal lymphogranuloma and chancroidal infection necessitates a careful selection of material for antigens and especially for Frei tests.

Archives of Neurology and Psychiatry, Chicago

38 913 1134 (Nov.) 1937

- Sensory Functions of Optic Thalamus of the Monkey (*Macacus Rhesus*). Symptomatology and Functional Localization Investigated with Method of Local Strychninization. J. G. Dusser de Barenne. New Haven, Conn. and O. Sager. Bucharest, Rumania—p. 913.
- Electrical Stimulation of Cortex Cerebri of Cats. Responses Elicitable in Chronic Experiments Through Implanted Electrodes. S. L. Clark and J. W. Ward. Nashville, Tenn.—p. 927.
- *Phenylpyruvic Oligophrenia. Introductory Study of Fifty Cases of Mental Deficiency Associated with Excretion of Phenylpyruvic Acid. G. A. Jervis. Thiells, N. Y.—p. 944.
- Cold Pressor Test in Tension and Anxiety. Cardiochronographic Study. B. V. White Jr. and E. F. Gildea. New Haven, Conn.—p. 964.
- Curve for Sugar Content of Blood Following Encephalography. Comparison with Usual Curve for Dextrose Tolerance. M. Scott. Philadelphia—p. 985.
- Studies in Diseases of Muscle. I. Metabolism of Creatine and Creatinine in Progressive Muscular Dystrophy. A. T. Milhorat and H. G. Wolff. New York—p. 992.
- Encephalomyelitis Complicating Measles. N. Malamud. Ann Arbor, Mich.—p. 1025.
- A Form of Chronic Epidemic Encephalitis Simulating the Landouzy-Jérôme Type of Progressive Muscular Dystrophy. Value of Studies on Creatine in Conjunction with Ingestion of Amino Acid as Aid in Differential Diagnosis. S. R. Dean. Taunton, Mass.—p. 1039.
- Disturbances of Activity in Case of Schizophrenia. A. Angyal. Worcester, Mass.—p. 1047.
- Neuro-Epithelial Cyst of the Third Ventricle. Report of Case with Recovery Following Operation. W. J. Gardner and O. A. Turner. Cleveland—p. 1055.

Phenylpyruvic Oligophrenia—Jervis studied fifty cases of phenylpyruvic oligophrenia. Twenty-one patients were inmates at Letchworth Village, thirteen patients were examined at the Wassau State School, eight at the Rome State School and eight, who were sibs or institutionalized patients, were examined at their respective homes. Examination of the members of the family of thirty-five patients showed that phenylpyruvic acid did not in any instance occur in the urine of mentally normal members. The clinical manifestations in their constitutional, neurologic and psychological aspects, appear to occur with a certain constancy and are sufficiently characteristic to afford justification for regarding them as constituting a fairly well defined clinical syndrome. Critical examination of the anamnestic data seems to exclude any relation of exogenous agencies to the etiology of the disease, whereas the family incidence of the disease suggests that a genetic mechanism is of etiologic significance. Statistical elaboration and critical analysis of the genetic figures are

justification for regarding the condition as determined by a single recessive gene substitution. Clinically, the disease is characterized by pronounced intellectual defect coexisting with neurologic symptoms. These consist of extrapyramidal manifestations (rigid posture, muscular hypertonus and hyperkinesias) and exaggeration of the deep reflexes. Characteristic constitutional features are found in the majority of cases. From a biochemical point of view the condition appears to be an error of the metabolism of phenylalanine, consisting essentially of a failure to oxidize further a normal catabolite, phenylpyruvic acid, which consequently is excreted as such in the urine.

Arch of Physical Therapy, X-Ray, Radium, Chicago

18 609 672 (Oct.) 1937

- Dosimetry in Short Wave Therapy. Instrument for Dosage Determination of Patient's Circuit. E. Mittelmann. Vienna. Austria.—p. 613
- Research Methods and Physical Therapy. H. A. Carter. Chicago.—p. 619
- Physical Therapy of Chronic Atrophic Arthritis. E. M. Smith. Little Rock. Ark.—p. 622
- Postural Defects Related to Arthritis. E. F. Hartung. New York.—p. 626
- Chronic Arthritis of the Spine. Its Relation to Rheumatoid Disorders. M. F. Lautman. Hot Springs. Ark.—p. 630
- Proceedings of the First International Congress of Short Wave Therapy in Vienna. H. F. Wolf. New York.—p. 636
- Alternate Suction and Pressure Therapy in Peripheral Obliterative Vascular Diseases. J. R. Veal. New Orleans.—p. 640
- Transcerebrospinal Calcium Iontophoresis in Bronchial Asthma. Preliminary Note. A. Barnett. Brooklyn.—p. 646

Postural Defects Related to Arthritis—Hartung declares that defects in bodily posture affect patients with arthritis in five ways. 1. Poor posture is a mechanically inefficient carriage and therefore requires an undue amount of energy in standing and sitting. In this way it adds one more burden to the already overburdened constitutional inadequacy of these patients. 2. It produces ptosis of the gastro intestinal tract and decreases the vital capacity of the lungs. This embarrasses the normal function of these organs. 3. It predisposes to pains in the lower part of the back. 4. It causes undue trauma at certain joints, predisposing these to the localization of arthritis. In osteoarthritis, in which the process is generalized this static trauma localizes the development of pain in certain crucial areas such as in the lumbosacral and cervical spine, the knees and the feet. 5. It has a depressing psychologic effect. Chronic arthritis is a constitutional disease and until a clear idea is had of its etiology the most effective treatment must be directed toward the various constitutional derangements presented by these patients. Muscular exercise in itself unless properly planned will not correct postural defects. The key-stone of defective posture is often a lumbar lordosis and the associated pelvic tilt. To correct lumbar lordosis, emphasis is placed not on exercises alone but on developing a conscious control especially of the gluteal and abdominal muscles. Without gaining this neuromuscular control no amount of exercise will bring about satisfactory improvement in posture.

Connecticut State Medical Society Journal, Hartford

1 459 558 (Nov.) 1937

- Reminiscences in the Development of Gynecology. H. A. Kelly. Baltimore.—p. 459
- Conservative Treatment of Syphilis. A. K. Poole. New Haven.—p. 468
- Chemical Transmission of Nerve Impulses and Neuromimetic Drug Action. I. S. Goodman. New Haven.—p. 473
- The Place of Cesarean Section. F. C. Irving. Boston.—p. 483
- Studies in Vitamin C Content of Blood in Patients with Dental Abnormalities. D. Weisberger. Boston.—p. 492
- Clinical Picture of Suppurative Lesions of Petrosal Pyramid. S. J. Kopecky. New York.—p. 497
- Protamine Zinc Insulin. Improvement in Carbohydrate Tolerance. Clinical Observations. B. Greenhouse. New Haven.—p. 503
- The State Program for Crippled Children Under the Social Security Act. A. Steindler. Iowa City.—p. 505
- The Recent Revolution in Anesthesia. H. R. Griffith. Montreal.—p. 509
- Prefield Hospital Service. C. Barker. New Haven.—p. 515

Protamine Zinc Insulin and Carbohydrate Tolerance—Greenhouse attributes the increased carbohydrate tolerance of diabetic patients given protamine zinc insulin to the continuity of its effect and its prolonged action. It furnishes a basic insulin supply by creating a depot from which insulin is regularly and continuously liberated so that the body has available a supply of insulin at all times over a period of at least twenty-four hours. The metabolism of the diabetic patient is

thus more adequately stabilized, offering particular respite to the pancreas and liver. Protamine zinc insulin finds its greatest usefulness in the case in which the diabetes is in part at least functional, rather than in cases of diabetes in which the pancreas is so sclerosed as to allow for no improvement. Improvement occurred most frequently in the large middle aged group of patients.

Journal of Biological Chemistry, Baltimore

121 1372 (Oct.) 1937 Partial Index

- Relation of Vitamin D to Skin Respiration. A. K. Presnell. Cincinnati.—p. 5
- Abscess Nitrogen Metabolism in Anemic and Nonanemic Dog. Reserve Stores of Protein Apparently Involved. F. S. Daff. Frieda. S. Robscheit Robbins and G. H. Whipple. Rochester. N. Y.—p. 45
- Composition of Tissue Proteins. III. Arginine in Placenta. S. Griff and Ada M. Graff. New York.—p. 79
- Influence of Role Salts on Enzymatic Synthesis and Hydrolysis of Cholesterol Esters in Blood Serum. W. M. Sperry and V. A. Stojanoff. New York.—p. 101
- Effect of Prolonged Low Protein Diet on Serum Lipids of Dogs. I. H. Page. L. E. Farr and A. A. Weech. New York.—p. 111
- Studies on Chemistry of Blood Coagulation. IV. Lipid Inhibitors of Blood Clotting Occurring in Mammalian Tissue. E. C. Bargaff. New York.—p. 175
- Id. V. Synthetic Cerebroside Sulfuric Acids and Their Action in Blood Clotting. E. C. Bargaff. New York.—p. 187
- Amount of Iodine in Blood. E. J. Baumman and Nannette Metzger. New York.—p. 231
- Studies on Biologic Oxidations. IX. Oxidation Reduction Potentials of Blood Hematin and Its Hemochromogens. E. S. G. Barron. Chicago.—p. 285
- Relationship of Blood Cholesterol to Hemoglobin and Serum Protein. H. Schwarz and H. H. Lichtenberg. New York.—p. 315
- Studies on Role of Bromine in Nutrition. P. S. Winick and A. H. Smith. New Haven. Conn.—p. 345
- Turnover of Phospholipids in Intestinal Mucosa. R. G. Sinclair and C. Smith. Rochester. N. Y.—p. 361

Journal of Clinical Investigation, New York

16 833 950 (Nov.) 1937

- Bisulfite Binding Power of Blood in Health and in Disease with Especial Reference to Vitamin B₁ Deficiency. F. H. L. Taylor. S. Weiss and R. W. Wilkins. Boston.—p. 833
- Estimation of Subcutaneous Tissue Pressure by a Direct Method. G. E. Burch and W. A. Sodeman. New Orleans.—p. 845
- Clinical Studies of Blood Volume. III. Changes in Blood Volume, Venous Pressure and Blood Velocity Rate in Chronic Congestive Heart Failure. J. G. Gibson. 2d and W. A. Evans. Jr. Boston.—p. 851
- Measurement of Glomerular Filtration. Creatinine, Sucrose and Urea Clearances in Subjects Without Renal Disease. A. W. Winkler and J. Parra. New Haven. Conn.—p. 859
- Id. Creatinine, Sucrose and Urea Clearances in Subjects with Renal Disease. A. W. Winkler and J. Parra. New Haven. Conn.—p. 869
- Convenient Method for Determination of Approximate Cardiac Output in Man. J. S. Donald Jr. Philadelphia.—p. 879
- *Chronic Pylonephritis and Arterial Hypertension. A. M. Butler. Boston.—p. 889
- Allergy and Desensitization in Tuberculosis. H. S. Willis and C. E. Woodruff. Northville. Mich.—p. 899
- Relation of Serum Calcium to Serum Albumin and Globulins. A. B. Gutman and Ethel Benedict Gutman. New York.—p. 903
- Studies on Serum Proteins. I. Identification of Single Serum Globulin by Immunologic Means. Its Distribution in Serums of Normal Individuals and of Patients with Cirrhosis of Liver and with Chronic Glomerulonephritis. F. E. Kendall. New York.—p. 921
- *Quantitative Study of Oxidation of Glucose in Normal and Diabetic Men. J. M. Sheldon. M. W. Johnston and L. H. Newburgh. Ann Arbor. Mich.—p. 933

Chronic Pylonephritis and Arterial Hypertension—During the last ten years fifteen children between 3 and 11 years of age were observed by Butler at necropsy to have pylonephritis. Records of the blood pressures of seven of these patients are not available. The records of the blood pressures for the remaining eight patients show systolic pressures ranging from 250 to 140 mm of mercury and diastolic pressures from 170 to 110 mm of mercury, the average systolic and diastolic pressures being respectively 190 and 140 mm of mercury. Two of these patients had hypertensive crises and died of cardiac failure before significant nitrogen retention occurred. The clinical histories of two others of the group studied pathologically indicated that the pylonephritis and hypertension preceded severe nitrogen retention. During the same ten years three patients with pylonephritis and hypertension died but permission for necropsy was not obtained. The histories of two of these patients indicate that the pylonephritis and hypertension preceded significant renal insufficiency and nitrogen retention. During this period nine patients with pylonephritis and hypertension were admitted to the hospital and when last seen were living. Of these patients only one had renal insufficiency, and in this one the pylonephritis

and hypertension preceded the appearance of the diminished renal function. Thus there have been fifteen patients (six dead and nine living) who have had chronic pyelonephritis and hypertension over a period of years before there was appreciable diminution in the function of the kidney. There is no definite proof that the pyelonephritis preceded the hypertension. A patient, coincident with a ureteral calculus, was found to have a unilateral pyelonephritis and during the course of the next eight months hypertension and cardiac failure developed. The removal of the one infected kidney was followed by clearing of the urine and a return of the blood pressure to normal, where it has remained for twenty months. There is strong evidence that the pyelonephritis preceded the hypertension and in some way had a causal relation to it. The study has led to the hypothesis that the hypertension might well be related to the local effect of the pyelonephritis rather than to the renal insufficiency encountered late in the disease.

Oxidation of Dextrose in Normal and Diabetic Men—Sheldon and his collaborators compared the oxidation of dextrose in normal and diabetic men. When the three normal male subjects were studied in the fasting state, the amount of carbohydrate oxidized in the four hour period became larger as the carbohydrate of the preparatory diet was increased. This effect was consistently obtained when the carbohydrate in the preparatory diet was varied between 25 and 500 Gm. Further, when the dextrose was ingested at the beginning of the experimental period in amounts from 50 to 200 Gm, even though the carbohydrate preparation had been the same, the oxidation of dextrose was increased. When both the carbohydrate of the preparatory and chamber periods were simultaneously increased, the oxidation of dextrose was additive. The three diabetic subjects studied were free of any disease other than the diabetes mellitus. The amount of dextrose oxidized in the four hours was dependent on the severity of the patient's disease. However, the response to increasing the dextrose of the chamber period is similar to the response of the normal subjects, but quantitatively reduced. When the same subjects were studied after a period of from twenty-three to thirty-five days of constant hyperglycemia and glycosuria, the amount of dextrose oxidized in four hours stayed at a constant level even though the dextrose of the chamber period was increased from 0 to 100 Gm. Emphasis is placed on the inability to increase oxidation of dextrose in response to the ingestion of increased amounts of dextrose, a marked contrast to the normal controls who oxidized more dextrose when they ingested more of it. Increasing the carbohydrate preparation from two to three times above the tolerance of the diabetic patients resulted in but a slight increase in the amount of dextrose oxidized. This slight increase may be attributed to the associated hyperglycemia which produced a maximal stimulation of the mechanism for the utilization of carbohydrate. Once the maximal stimulation has been reached, further ingestion of dextrose can never result in additional oxidation.

Journal of Experimental Medicine, New York

66 527-652 (Nov.) 1937

- Studies on Experimental Hypertension. VI. Effect of Section of Anterior Spinal Nerve Roots on Experimental Hypertension Due to Renal Ischemia. H. Goldblatt and W. B. Wartman. Cleveland—p. 527.
- *Mode of Action of Sulfanilamide in Experimental Streptococcal Empyema. F. P. Gay and Ada R. Clark. New York—p. 535.
- Studies on Role of the Spleen in Experimental Polymyositis. E. H. Lennette. Chicago—p. 549.
- Globin Utilization by Anemic Dog to Form New Hemoglobin. Freda S. Robscheit Robbins and G. H. Whipple. Rochester, N. Y.—p. 565.
- Panmyelophthisis with Hemorrhagic Manifestations in Rats on Nutritional Basis. P. G. Gory, H. Goldblatt, F. R. Miller and R. P. Fulton. Cleveland—p. 579.
- Relation of Altered Local Tissue Reactivity (Schwartzman Phenomenon) to Infection and Inflammation. A. R. Moritz. Cleveland—p. 603.
- Bactericidal Action of Human Serum on Hemolytic Streptococci. III. Studies Concerning (1) Significance of Hydrogen Ion Concentration in Relation to Streptococcal Action of Serum. (2) Effect of Reducing Agent on Phenomenon. W. S. Tillett and C. C. Stock. Baltimore—p. 61.
- Change in Blood Vessel (Capillary Fragility) with Inflammation. E. Zander. New York—p. 63.

Action of Sulfanilamide in Empyema—Gay and Clark state that sulfanilamide prevents the evolution of an invariably fatal streptococcal empyema in rabbits when it is given repeatedly and in sufficient doses subcutaneously. Complete steriliza-

tion of the inoculated cavity occurs on approximately the second day. The serum, defibrinated blood and artificial pleural exudate of similarly treated animals inhibits the growth of the same streptococcus in the test tube, but even repeated doses of such treated blood serum fail to sterilize the culture. The coccic chains grown in such drugged serum are elongated and present pleomorphic and metachromatic organisms and may give rise to colonies that are at first less predominantly mucoid in appearance. Such organisms have lost little if any of their virulence. Cooperation on the part of locally derived clasmatocytes is apparently required in complete sterilization of the animal body. Sulfanilamide apparently produces a bacteriostasis sufficiently marked to protect the accumulated leukocytes and to allow the natural defense macrophages to accumulate. There is direct evidence that the drug does not in itself stimulate the mobilization of the macrophages. There is no evidence that the cell reaction which finally accounts for disposal of the organisms is other than local.

Journal of Pediatrics, St. Louis

11 455-606 (Oct.) 1937

- Substitution of Olive Oil for Butter Fat in Infant Feeding. M. I. Blatt and E. H. Harris. Chicago—p. 455.
- Multiple Facial Anomalies. E. T. McEnery and J. Brennemann. Chicago—p. 468.
- Unusual Congenital Anomaly of the Spine and Ribs. Extensive Spina Bifida Occulta, Probable Included Twin and an Uncommon Fusion Anomaly of the Ribs. M. Cooperstock and E. R. Elzinga, Marquette, Mich.—p. 475.
- Active Scurvy in an Infant Receiving Orange Juice. E. A. Hagmann. Detroit—p. 480.
- Variability of the Kahn Reaction in Children. H. B. Rothbart. Detroit—p. 484.
- *Untreated Seronegative Mothers of Syphilitic Children. Report of Two Cases. J. R. Waugh. Norfolk, Va.—p. 490.
- *Fever Therapy in Children. L. Spektor. Hartford, Conn. and A. McBryde. Durham, N. C.—p. 499.
- Listerella Meningitis. Report of Additional Case with Necropsy Findings. Mary A. Poston, S. E. Upchurch and Marguerite Booth. Durham, N. C.—p. 515.
- Staphylococcus Aureus Meningitis. Report of Case with Recovery. R. L. Jackson. Iowa City—p. 518.
- Antirachitic Efficiency of Irradiated Cholesterol. J. S. Hood. Clearwater, Fla. and Irene Ravitch. Baltimore—p. 521.
- Sudden Death Due to Mercurial Diuretics. H. M. Greenwald and S. Jacobson. Brooklyn—p. 540.
- Acute Naphtha Poisoning. Report of Case in Infant. J. P. Price and F. Harrison. Florence, S. C.—p. 547.
- Congenital Bronchogenic Cyst of Mediastinum. Report of Case. J. E. Alford. Buffalo—p. 550.
- Abscess of Epiglottis in an Infant. Case Report. E. L. Noone. Drexel Hill, Pa. and W. P. Shields. Philadelphia—p. 556.
- Thrombocytopenic Purpura Haemorrhagica. Two Cases Treated with Parathyroid Hormone and Calcium Gluconate. M. L. Ainsworth, S. D. Edelman and R. I. Fried. Columbus, Ohio—p. 559.
- Hemorrhage from Meckel's Diverticulum. R. A. Higgins and J. E. Gundy. Port Chester, N. Y.—p. 563.
- Technic of Intravenous Transfusion of Blood in New Born Infants. W. H. Proleau. Charleston, S. C.—p. 568.

Untreated Seronegative Mothers of Syphilitic Children—Waugh states that only two untreated seronegative mothers of children with prenatal syphilis were admitted to the United States Public Health Service Venereal Disease Clinic, Hot Springs, Ark., during the seven years 1930 to 1936. Blood serum Wassermann reactions, spinal fluid examinations and careful physical examinations revealed no evidence of syphilis in these two mothers. There is no doubt that their two children had prenatal syphilis rather than acquired syphilis, as both children had bilateral interstitial keratitis, Hutchinsonian upper central incisors, saddle noses and 4 plus blood serum Wassermann reactions.

Fever Therapy in Children—Spektor and McBryde believe that severe reactions of fever therapy can be avoided by careful observation of the patient before and during treatment. The benefits derived from fever therapy outweigh the risks, especially in gonorrheal infections. Treatment at high temperature is not devoid of danger. At Duke Hospital about 430 fever treatments (at temperatures varying from 104 to 106.7 F) have been given to 280 patients (thirty-two children 248 adults). Four deaths occurred in adults. If the patient tolerates the first three hours of fever, the remaining two to nine hours of treatment usually will progress smoothly, provided there is an adequate intake of fluid the patient is fairly quiet and the temperature is not allowed to go above 106.7 F. In the thirty

two children, artificial fever has been used in treating gonorrheal infections, chronic infectious arthritis, syphilis, chorea encephalitis, Hodgkin's disease, tuberculous meningitis, undulant fever, interstitial keratitis and leukemia

Kentucky Medical Journal, Bowling Green

35 497 538 (Nov.) 1937

- Blindness and Its Prevention H G Reynolds Paducah—p 499
Subordinate Obligations of the Surgeon J A Ryan Covington—p 505
A Tribute to My Profession A W Nickell Louisville—p 508
Importance of Early Diagnosis and Treatment of Acute Inflammation of Middle Ear G F Doyle Winchester—p 517
Complete Inversion of Uterus Report of Case Successfully Treated by Manual Reposition J D Hancock Louisville—p 520
The Common Cold A A Shaper Louisville—p 523
Some Traditions and Responsibilities of the Medical Profession E L Bishop Knoxville Tenn—p 526
Clinical Application of Sedimentation Rate or Suspension Stability R R Elmore Louisville—p 530
Treatment of Pulmonary Tuberculosis in a Rural Community with Particular Reference to Bilateral Disease O A Beatty Glasgow—p 533

Missouri State Medical Assn Journal, St Louis

34 403 430 (Nov.) 1937

- The Opportunities of Internship J Basman St Louis—p 403
Advantages of Service in a State Hospital for Mental Diseases E F Hector Farmington—p 404
Advantages of Service in the State Sanatorium R H Runde Mount Vernon—p 406
The Psychologic Approach to the Handicapped Child W J Stewart Columbia—p 408
The Acute Alcoholic W F Friedewald St Louis—p 410
Modern Methods of Typing the Pneumococcus R O Muether St Louis—p 412
Simultaneous Malignant Change in Benign Tumors W E B Hall St Joseph—p 415
A Simple Continuous Suction Device with Some New Indications and Uses M Goldenberg and I C Middleman St Louis—p 416

The Patient with Acute Alcoholism—Friedewald states that during the last two years there were 1,887 cases of alcoholism admitted to the St Louis City Hospital. About two thirds of the cases were classified as acute. Fifty of the patients died and necropsies were obtained on nine of them. In these cases alcohol was considered either the immediate or the contributory cause of death. In the necropsies all but two cases showed marked fatty infiltration of the liver. The brain was examined in only three of the cases, two showed cerebral edema and the other showed rather marked cerebral atrophy. Four cases showed a bronchopneumonia. One patient, a man aged 45, a chronic alcohol addict who entered the hospital vomiting blood and in shock, at necropsy showed an acute gastritis with erosion of blood vessels and resultant hemorrhage. While the patient with acute alcoholism can usually be given a good prognosis for recovery, a number of these cases are real medical emergencies and require accurate diagnosis and active treatment. The treatment depends on the condition of the patient and the stage of the alcoholism. Ordinarily evacuation of the stomach by means of a stomach tube followed by a saline purgative is indicated. Apomorphine may be used, which also acts as a hypnotic. In the excitement stage, sedatives are necessary. Paraldehyde, bromides and chloral hydrate are the drugs used most commonly. In the depressant stage caffeine or strychnine is used as a stimulant. Acute alcoholic coma causes a dangerous respiratory depression, paralysis and cyanosis. Death may be prevented and recovery accelerated by the inhalation of 90 per cent oxygen and 10 per cent carbon dioxide for a time sufficient to reestablish normal color and respiration. Since the alcoholic patient is usually in a state of starvation and avitaminosis, he must be given a high calorie diet rich in all vitamins supplemented with large doses of vitamin B. Patients showing cerebral edema with symptoms of increased intracranial pressure are given chloral hydrate and sodium bromide rectally for sedation. Saline purgatives and hypertonic dextrose intravenously aid in relieving the cerebral edema. Repeated spinal drainage also is recommended. A complication that can be overlooked easily is that of hypoglycemia. Most chronic alcohol addicts have fatty livers and there is little glycogen present. Fractures of the skull, lacerations, bruises and the like must always be kept in mind when examining an acute alcoholic patient. Fracture of the skull can be easily overlooked in an unconscious alcoholic patient.

Nebraska State Medical Journal, Lincoln

22 405 444 (Nov.) 1937

- Surgical Treatment of Primary Carcinoma of the Lung R H Overholt Boston—p 405
Early Prognosis in Pneumococcal Pneumonia W W Waddell Beatrice—p 412
Removable Internal Fixation After Reduction of Certain Fractures by the Use of Beaded Wire J E M Thomson and C F Ferciot Lincoln—p 415
A New Era in Anesthesia J Weinberg Omaha—p 418
Cyclopropane Anesthesia from the Standpoint of the Surgeon J W Duncan Omaha—p 421
Cyclopropane Anesthesia from the Standpoint of an Anesthetist B H Harms Omaha—p 425
Persistent Enlarged Thymus Gland Case Report J C Egan Madison—p 429

New England Journal of Medicine, Boston

217 687 724 (Oct 28) 1937

- Epidemiologic and Immunologic Experiments on Rabies L T Webster New York—p 687
The Dietetic Treatment of Eczema in Early Infancy L W Hill Boston—p 690
Maternal Mortality at the Boston Lying In Hospital in 1935, 1934 and 1935 F C Irving Boston—p 693
Narcolepsy and Its Treatment with Benzedrine Sulfate H Ulrich Boston—p 696
Cardiospasm: Methods of Procedure in Presence of Serious Esophagitis Report of Two Cases N Canfield New Haven Conn—p 702

Narcolepsy and Its Treatment with Benzedrine Sulfate—Ulrich reexamined his cases of narcolepsy that have been treated with benzedrine sulfate for nearly two years. No permanent deleterious effects were noted, and there was no evidence of habit formation. Some of the patients complained of temporary disturbances, including anorexia especially if the drug was taken before meals. Slight temporary elevation of the blood pressure and of the basal metabolic rate was produced in a few cases but no permanent effect of that nature was observed. Although the need for caution in the presence of vascular hypertension is emphasized, a case is reported in order to show that hypertension, arteriosclerosis and senility are not absolute contraindications to the use of benzedrine in suitable cases. Loss of weight was the result of the treatment in several obese patients. This is believed to have been due in part to the lessened appetite that may result from the use of the drug and in part to the change from periodic quiescence to a state of greater mental and physical activity. Harm may come from the careless and uncontrolled use of benzedrine in the treatment of narcolepsy especially in otherwise healthy young persons. Dibenzyl carbinamine, a related compound, was tried in a few cases. It had no beneficial action on the narcoleptic state, and its deleterious effect on the gastro-intestinal tract was greater than that of benzedrine. Oral medication with benzedrine sulfate appears to be the only satisfactory method of treatment.

New Orleans Medical and Surgical Journal

90 245 314 (Nov.) 1937

- Diabetes Experiences with Protamine Insulin I I Lemann New Orleans—p 245
The Principles of Surgery on Diabetic Patients U Maes New Orleans—p 249
Diabetes in Childhood C J Bloom New Orleans—p 252
The Pathology of Diabetes Mellitus S Warren Boston—p 260
Some Minor Disorders of the Female Urethra E B Vickery New Orleans—p 262
Treatment of Bronchial Asthma Report of 244 Follow Up Cases W H Browning Shreveport La—p 269
Infections of the Middle Ear J T Crebbin Shreveport La—p 274
Role of the Orthopedic Surgeon in Treatment of Arthritis R B Osgood Boston—p 279
Nineteenth Century Contributions to Treatment of Pulmonary Tuberculosis S Jacobs New Orleans—p 286

Infections of the Middle Ear—Crebbin states that a study of middle ear infections is facilitated by knowledge of the anatomy of the temporal bone, which at birth and for months thereafter, consists of three distinct parts: the squamous, the tympanic and the petromastoid. At this period in life these principal parts are held together by a connective tissue which ossifies slowly and as a rule, the connection between them is imperfect at the end of the first year. Usually there is no sharp demarcation between an infection of the middle ear and infection of the mastoid. The borderline between an attack of acute catarrhal otitis and an attack of acute suppurative otitis is indefinite. The deciding factor

depends on the type and virulence of the invading organism, the resistance of the patient and the anatomic peculiarities. Earache is the most common symptom in acute infections of the middle ear. There is usually tenderness over the mastoid antrum and tip. Deafness may be present. There is loss of appetite and sleep. Temperature is variable and is not a dependable sign. Convulsions and meningitis may be present from the onset. The appearance of the tympanic membrane is characteristic, but this changes with the progress of infection. There is a lack of luster to the membrane and loss of light reflex. There is usually more or less bulging and redness. At times the appearance of the membrane may be gray instead of red. A patient showing these symptoms should have a myringotomy as soon as possible. An early myringotomy performed amid strict surgical surroundings is generally accepted as a safe procedure. A myringotomy will not cure all patients, for further treatment is ordinarily necessary, and even a mastoidectomy may finally be indicated. A liquid diet, with an abundance of fruit juices, and sunshine are indicated. Carotene in oil and cod liver oil preparations are of great help. A hematologic study and repeated roentgenograms should be made in each case. A swab of the pus is taken after a myringotomy or from the cavity after a mastoidectomy and a vaccine prepared and used if there is delay in the cessation of the aural discharge or delay in the healing of the wound. Vaccines are more effective if autogenous, freshly prepared and started in small doses. The author urges that the dry method of treating be followed in all cases of acute suppurative otitis media. An adenectomy and tonsillectomy should be done as soon as the acute symptoms have passed. A thorough conservative treatment is always indicated in an acute suppurative otitis media. If there is no improvement after a reasonable time, a mastoidectomy is indicated. A preliminary transfusion is indicated especially if the patient is a very sick child or in a weakened condition. Following a mastoidectomy, transfusions will shorten the duration of the disease and hasten the recovery of the patient. Any patient with chronic suppuration of the middle ear is potentially in danger of his life. Infants and young children should be given a general anesthetic, whereas young adults and adults should have a local anesthetic. The author has had most satisfactory results in using the Miller zinc ionization machine in cases that do not respond to the usual accepted treatment in chronic suppurative otitis. Three cases are cited which show the value of this treatment.

Ohio State Medical Journal, Columbus

33 1134-19 (Nov) 1937

- Appendicitis—Surgical Case Based on the Pathologic Conditions Present J. L. DeCoursey Cincinnati—p 1203
- Conduct and Personality Disorders in Certain Types of Pituitary Dyscrasias H. C. Schumacher Cleveland—p 1209
- Herpes Zoster Ophthalmicus D. J. Lyle Cincinnati—p 1213
- Meningitis of Otic Origin E. P. Shepard Columbus—p 1218
- Pregnancy Complicated by Mitral Stenosis and Toxemia S. J. Webster and J. E. Morgan Cleveland—p 1225
- Torsion of the Spermatic Cord—Presentation of Case and Short Resume of the Literature E. A. Ockuly and F. M. Douglass Toledo—p 1227
- Observations on Use of Benzadrine in Psychoses Dorothy E. Donley Amityville N. Y.—p 1229
- Value of Knee Chest Exercises in Postpartum Retrodisplacement E. Eichner Cleveland—p 1233
- Rat Bite Fever J. A. Garvin, Cleveland—p 1235
- Vaginal Discharge A. Cline Davton Ohio—p 1236

Knee-Chest Exercises in Postpartum Retrodisplacement—Eichner studied 316 women having 402 deliveries in the obstetric service at Mount Sinai Hospital, 227 per cent of the uteri of 211 patients instructed in knee-chest exercises during their stay at the hospital were found in a posterior position at their first dispensary examination, while 277 per cent of the uteri of the 191 patients not so instructed were retroplaced at their first postpartum examination. In the entire series 101 patients or 25.1 per cent of the total, had retrodisplacements at their initial postpartum visit. The percentage of posterior displacements increased with the parity from 20 in the primiparas to 41.2 in the quintigravidas, 30.4 per cent of the posterior displacements treated by knee-chest exercises were failures and of these six patients responded to the use of a pessary and seven were discharged. In cases in which the pessary failed the knee-chest position also failed. In twelve patients the uterus became anterior without treatment for the

retrodisplacement in an interval less than that required for either pessaries or knee-chest exercises. The conclusion is that knee-chest exercises are valueless in the treatment of postpartum retrodisplacement except during the third and fourth weeks of the puerperium, when these exercises appear to reduce the percentage of displacements.

Physiological Reviews, Baltimore

17 485-646 (Oct) 1937

- Transmission of Nerve Endings by Acetylcholine G. I. Brown Iond England—p 485
- Transmission of Sympathetic Nerve Impulses A. Rosenbluth Boston—p 514
- Synaptic and Neuromuscular Transmission J. C. Eccles Oxford England—p 538
- Cellular Changes in Anterior Hypophysis with Especial Reference to Its Secretory Activities Aura E. Severinghaus New York—p 546
- Cellular Differentiation and Tissue Culture W. Bloom Chicago—p 589
- Action of Morphine on Digestive Tract H. Krueger Ann Arbor Mich—p 618

Public Health Reports, Washington, D. C.

52 1519-1562 (Oct 29) 1937

- Sickness Among Male Industrial Employees During the Second Quarter and First Half of 1937 D. K. Brundage—p 1523
- The Association of Scurvy with Oral Diseases F. C. Cady—p 1576
- Kentucky's Plan for Public Health Education A. T. McCormick and Reba F. Harris—p 1550

Southern Medical Journal, Birmingham, Ala.

30 1043-1144 (Nov) 1937

- Primary Liver Carcinoma—Relation to Yellow Atrophy Cirrhosis K. M. Lynch Charleston S. C.—p 1043
- Primary Carcinoma of the Ileum J. W. Nixon San Antonio Texa—p 1049
- Regional Ileitis with Involvement of Cecum D. J. Pessagno Baltimore—p 1052
- Congenital Dextrocardia—Report of Ten Cases L. K. Emenhiser Oklahoma City—p 1055
- Syphilis of the Stomach—Case Report J. O. Finney Gadsden Ala—p 1058
- Diagnostic Difficulties in Perinephric Abscess—Case Report J. R. Stites and J. A. Bowen Louisville Ky—p 1062
- Pancreatic Lithiasis J. Witherspoon Nashville Tenn—p 1064
- *Acute and Chronic Pancreatitis—Clinical Observations J. Friedenwald Baltimore—p 1067
- Diagnostic Value of Episcleritis A. G. Wilde Jackson Miss—p 1074
- Chronic Sinusitis—Complete Operation—Technic and Results in 203 Consecutive Cases W. R. McKenzie Baltimore—p 1077
- Results of Pyretotherapy at the Vanderbilt University Hospital R. H. Williams Nashville Tenn—p 1080
- Study of Mortality Rate and Complications Following Therapeutic Malaria T. C. C. Fong Washington D. C.—p 1084
- The Present Status in Treatment of Chronic Prostatitis F. L. Van Alstine Jackson Miss—p 1089
- The Infant Hygiene Program and Results in Rutherford County Tennessee J. B. Black Murfreesboro Tenn—p 1091
- Pyogenic Psoas Abscesses F. A. Hoshall Charleston S. C.—p 1097
- Alternating Scoliosis with Proved Etiology—Case R. A. Milliken Little Rock Ark—p 1099

Pancreatitis—Friedenwald declares that the incidence of acute and chronic pancreatitis is far greater than is recognized and, as the symptomatology of these conditions is usually indefinite, the correct diagnosis is too rarely made. Acute hemorrhagic pancreatitis is ushered in by a sudden violent pain in the epigastrium, with signs of shock, which may suggest rupture of a peptic ulcer, of the gallbladder or even of the appendix. It may be followed by death within a few hours or days. The acute gangrenous form follows the hemorrhagic type in which the symptoms have been of a milder or subacute form. This condition manifests itself by the appearance of chills fever and the formation of a mass in the epigastrium within a week or two after the onset of the hemorrhagic stage. The acute suppurative type frequently ensues as a subsequent stage after either of the first two types. It is associated with chills fever and frequently jaundice, nausea, vomiting and severe epigastric pain. Fat necrosis is an important diagnostic accompaniment especially of hemorrhagic and gangrenous pancreatitis. When the disease has progressed to the gangrenous and suppurative stages speedy operation is indicated. Although the symptoms of chronic pancreatitis are rarely definite its presence should be suspected if in a patient who has suffered from chronic dyspepsia there is present a severe or slight epigastric pain associated with nausea, vomiting, emaciation, extreme weakness, slight jaundice and occasionally pyrexia and intermittent glycosuria. In many instances the bulky, soft fecal and o stools containing undigested fat and protein aid in arriving at

the diagnosis. The duodenal contents for pancreatic ferments may be markedly diminished in their activity in this condition. In the prophylactic treatment, attention must be especially directed to the early removal of gallstones before complications have occurred and, as preventive measures, a carefully regulated diet should be followed, together with nonsurgical biliary drainages. When the disease is definitely established, immediate operation is advised. If gallstones or pancreatic stones are present, they should be removed and infection overcome.

Surgery, Gynecology and Obstetrics, Chicago

65 593 720 (Nov.) 1937

- Congenital Umbilical Hernia J Jarcho New York—p 593
 *Initiation of Respiration in Asphyxia Neonatorum Clinical and Experimental Study Incorporating Fetal Blood Analyses R A Wilson M A Torrey and Katherine S Johnson New York—p 601
 Peritoneoscopy J C Ruddock Los Angeles—p 623
 Hemorrhagic or Traumatic Cysts of Mandible R H Ivy and L Curtis Philadelphia—p 640
 Pituitary Basophilism Review of Forty Two Verified Cases with Report of Personal Case P B Bland and L Goldstein Philadelphia—p 644
 Roentgen Therapy in Epitheliomas of Maxillary Sinus J A del Regato Paris France—p 657
 *Cystic Changes in Endometrium L M Randall and W E Herrell Rochester Minn—p 666
 Pathogenesis of Anal Fissure and Implications as to Treatment P C Blaisdell Pasadena Calif—p 672
 The Tunnel Method for Correction of Uterine Retroversion J L Cameron London England—p 679
 Resection of Head of Pancreas and Duodenum for Carcinoma Pancreatoduodenectomy A Brunschwig Chicago—p 681
 Treatment of Acute Emyema J M Beardsley Providence R I—p 685
 Simplified Procedure for Thyroid Exposure C G Heyd New York—p 688
 Bumper and Fender Fractures F G Dyas and M L Goren Chicago—p 690
 Fragmentation and Expulsion of a Common Duct Stone into Duodenum by Using Ether and Amyl Nitrite W Walters and H R Wesson Rochester Minn—p 695
 Localization and Removal of Foreign (Metallic) Bodies D A Willis Chicago—p 698
 New Suture for Tendon and Fascia Repair C M Gratz New York—p 700
 Operative Cholangiography P L Mirizzi Cordoba Argentina—p 702

Initiation of Respiration in Asphyxia Neonatorum—Wilson and his associates aver that the treatment of asphyxia neonatorum has not kept pace with other advances in obstetrics. A thorough understanding of drugs, anesthetics and resuscitation should be part of the knowledge of every obstetrician. Less than 5 per cent of the volume of oxygen in the blood of the umbilical vein is accompanied by clinical evidence of asphyxia. A brief fall below 1 per cent of its volume is not necessarily fatal, but longer exposures cause permanent damage to the delicate nerve cells of the center and resuscitation is no longer possible. New evidence is presented indicating that the atelectatic lung cannot be opened by gases under pressure in the trachea. Pressures as high as 18 mm of mercury fail to open alveoli and result in damage to the lung tissue. Lower, and therefore safer, pressures are even less efficacious. Respiratory depressant drugs and anesthetics are discussed and listed in the order of their safety. Morphine alone or in combination has other purposes during labor besides the relief of pain. Because of this it should be administered expertly not less than two hours before delivery. No one method of resuscitation is entirely satisfactory. A method for obtaining graphs of the apnea and early respirations of the new-born is described. The method furnishes conclusive evidence of respiratory status at birth and the effects on the baby of drugs and anesthetics administered to the mother before delivery and shows the efficacy of various methods of resuscitation. In severe cases of asphyxia and respiratory depression the injection of a respiratory stimulant is logical and to a large extent the only possible way of producing a respiratory gasp. An improved technic for the administration of respiratory and cardiac stimulants, saline solutions and so on by means of the umbilical vein is described.

Cystic Changes in Endometrium—By microscopic examination of twenty eight specimens of endometrium Randall and Herrell observed that cystic changes occurred in all phases of the menstrual cycle. In those endometriums in which cystic changes occur in the proliferative phase there is often an accompanying proliferation, so called hyperplasia, of a greater degree than occurs normally. Thus a polypoid endometrium is usually

increased in thickness, although the microscopic picture of the proliferation remains the same. As the differential phase appears and increases, this proliferation is less and less noticeable, but the cystic changes persist. Atypical bleeding was not present in any case in which a well differentiated endometrium was associated with cystic changes. Those tissues in which cystic changes were found in the early differential phase were not infrequently associated with atypical uterine bleeding. In cases in which a cystic endometrium was in the late proliferative phase of the menstrual cycle, atypical bleeding was more frequently present. The essential difference in these specimens of the endometrium is the degree of differentiation which must exist because of a difference in the activity of the hormone of the corpus luteum. There is microscopic evidence that the function of the corpus luteum is not on an all or none basis. Cystic changes are common in the endometriums of women at the beginning of the menopause, when the first phase of ovarian failure is commencing. Ovarian failure is essentially the same among younger women and should be accompanied by the same microscopic appearance of the endometrium.

United States Naval Med Bulletin, Washington, D C

35 373 560 (Oct.) 1937

- Quantitative Study of Mental and Neuromuscular Reactions as Influenced by Increased Air Pressure C W Shilling and W W Willgrube—p 373
 *Relation of Carbon Dioxide to Artificial Respiration F S Johnson—p 380
 Endocrines Present Day Concepts of Endocrinology P F Dickens and O J Brown—p 387
 Treatment of Malaria with Atabrine Followed by Plasmochin C R Ball—p 418
 Consideration of Mechanism and Treatment of Surgical Shock T R Austin—p 426
 To What Extent Is Reality Adjustment Concerned in Selection of Flying Trainee? J W Vann—p 434
 Copper Sulfate Treatment of Trichophytosis J B Moloney—p 440
 Oral Diagnosis as Procedure in Indexing General Diseases Manifested in the Mouth C W Schantz—p 441
 Hepatitis Acute J Love—p 446
 Study of Syphilis in the Navy D T Prehn—p 450
 Evaluation of Recent Trends in Medical Treatment of Peptic Ulcer E Risen—p 460

Relation of Carbon Dioxide to Artificial Respiration—Johnson points out that a modification (raising and lowering the arms at the elbows alternately with prone pressure) of the Schafer prone pressure method has been proposed by Hederer. An evaluation of this method has indicated the possibility of increasing the pulmonary ventilation in the Schafer method by more than 40 per cent. The great sensitivity of the respiratory center to carbon dioxide is well attested by the fact that artificial respiration applied to the extent of lowering the alveolar carbon dioxide as little as 0.2 per cent below normal is sufficient to cause apnea. On the other hand, when the alveolar carbon dioxide pressure is raised by only 2 mm the breathing is increased about threefold. If the carbon dioxide of inspired air is increased to 4.5 per cent it is impossible to produce an apneic pause, however forcefully the artificial respiration may be carried out. There seems no reason to avoid the conclusion that every form of manually applied artificial respiration should be accompanied by the inhalation of carbon dioxide whenever possible. The use of an apparatus of the type of the H-H inhalator is recommended in connection with artificial respiration.

Wisconsin Medical Journal, Madison

36 797 880 (Oct.) 1937

- The Blood Sedimentation Rate M G Peterman Milwaukee—p 815
 Measles Use of Convalecent Serum in Prevention Modification and Treatment M Hardgrove A B Schwartz and Louise F King Milwaukee—p 817
 Extrovesical Urinary Bladder Report of Case W M Kearns Milwaukee—p 820
 Transurethral Prostatic Resection for Bladder Neck Obstruction A H Gundersen La Crosse—p 824
 Tuberculosis The Clinical Phase H M Coon Statesman—p 829

36 881 964 (Nov.) 1937

- Prevention of Disability Prevention Through Periodic Observation M G Peterman Milwaukee—p 895
 The Early Diagnosis and Medical Treatment of Poliomyelitis H K Tenney Madison—p 900
 The Prevention of Disability in Poliomyelitis H L Greene Madison—p 903
 Rheumatic Heart Disease in Childhood H E Marsh Madison—p 906
 Acute Osteomyelitis in Children W P Blount Milwaukee—p 910
 Fractures of the Elbow in Children I Schulz Milwaukee—p 913

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Archives of Disease in Childhood, London

12 267 338 (Oct.) 1937

- Tumors of Sympathetic Nervous System in Children. Study of Twenty Five Cases. Ruby O. Stern and G. H. News—p. 267
Cerebral Tumors in Children. Pathologic Report. Ruby O. Stern—p. 291
Studies on Retention of Iron in Childhood. J. H. Hutchison—p. 303
*Demonstration of Tubercle Bacillus in Pulmonary Tuberculosis of Childhood. S. Campbell—p. 321

Demonstration of Tubercle Bacillus—Campbell describes the advantages of the various methods of demonstrating the tubercle bacillus and attempts to establish the comparative value of the aids to diagnosis in a series of fifty suspected children. In the efforts to demonstrate the tubercle bacillus in pulmonary tuberculosis, the greatest success was obtained by culture of the washings of the stomach. Of the twelve cases in which the tubercle bacillus was eventually isolated culture on Loewenstein-Jensen medium was carried out in ten instances and was positive in eight, i. e., 80 per cent. Of the twelve positive washings from the stomach, sputum was obtained in eight instances and of these five, or 63 per cent, disclosed the presence of the bacillus. In addition to the lower proportion of positive results from examination of the sputum the difficulty, indeed the impossibility, of always obtaining the sputum must be taken into consideration. Although the children resent lavage of the stomach, the swallowed sputum can always be obtained. Direct smear of the washings of the stomach was much less frequently positive than was culture. In the ten positive cases in which culture was carried out the organism was found by direct smear in five. Animal inoculation was also less frequently positive, as in only five of the ten cases was the organism isolated. The risk of the animals dying from intermittent disease and the long time required for the test are further drawbacks.

Brain, London

60 281 376 (Sept.) 1937

- Vasomotor Responses in Toes. Effect of Lesions of Cauda Equina. J. Douglis, J. S. M. Robertson and E. A. Carmichael—p. 281
Dural Sinus Thrombosis in Early Life. Recovery from Acute Thrombosis of Superior Longitudinal Sinus and Its Relation to Certain Acquired Cerebral Lesions in Childhood. O. T. Bailey and G. M. Hass—p. 293
Abnormalities in Amount and Circulation of Cerebrospinal Fluid Associated with Otitis Media. A. A. McConnell—p. 315
Syndrome of Superior Cerebellar Peduncle in the Monkey. A. E. Walker and E. H. Botterell—p. 329
Ataxia and Astereognosis of Bulbar Origin. M. David and H. Askenasy—p. 354
*Cerebral Infection with *Schistosoma Japonicum*. J. G. Greenfield and B. Pritchard—p. 361

Dural Sinus Thrombosis in Early Life—Bailey and Hass made a study of three children who presented organized and canalized thrombi in the superior longitudinal sinus. These three instances were found at necropsy in a series of eighty cases of sinus thrombosis of all types. One patient developed acute neurologic disturbances in the course of cardiac decompensation resulting from mitral stenosis of rheumatic origin. At necropsy, organized and canalized thrombi were found in the superior longitudinal and right lateral sinuses. There was a zone of organizing hemorrhage and softening in the cerebral cortex. The other two patients were infants who developed normally up to the time of their acute illnesses, characterized by severe diarrhea and vomiting. During the illness of one patient and shortly after the subsidence of acute symptoms in the other patient it became obvious that there was impairment of mental function. Death occurred several months later. Portions of the superior longitudinal sinus of each patient contained organized and canalized thrombi. The pathologic changes in the brain and meninges allowing for such repair as might be expected after a few months, conformed with those changes which are commonly associated with thrombosis of the superior longitudinal sinus of short duration. The authors believe that the study gives support to their contention that certain acquired cerebral defects are due to thrombosis of the superior longitudinal sinus and its sequels. The organ-

ized thrombi may be small and easily overlooked, as unless the entire lumen is occluded the process of organization tends to reduce their size greatly. A thorough search of the dural venous sinuses for the presence of organized thrombi may elucidate the causation of some instances of focal cerebral gliosis, "encephalitis" of childhood and spontaneous subdural or subarachnoid hemorrhage.

Cerebral Infection with *Schistosoma Japonicum*—Greenfield and Pritchard present clinical and pathologic data which refer to two patients, each of whom presented a symptom complex suggesting the presence of a cerebral tumor and in whom operation disclosed a mass in the brain identified as a collection of eggs of *Schistosoma japonicum*. If a patient who is known to have sojourned in a part of the world infested with *Schistosoma japonicum* later has focal epileptic attacks the possibility should be considered that these may be due to a collection of the eggs of this parasite in the brain. Changes that give support to such a conclusion are undernourishment with a mild secondary anemia and a high eosinophil count in the blood and with a high protein and cellular content in the cerebrospinal fluid. Confirmatory evidence should be looked for in the stools. Eggs of the parasite were found in the stools of both patients. The prognosis is good when operative removal of the tumor is followed by a course of antimony tartrate.

British Journal of Ophthalmology, London

21 529 576 (Oct.) 1937

- Conjunctival Pemphigus. M. H. Whiting—p. 529
Some Cases of Paralytic Squint. P. G. Doyne—p. 531
Bilateral Mesial Superficial Deficiency of the Sclera. B. Graves—p. 534
Divergent Strabismus. E. E. Cass—p. 538
Extra Ocular Influence in Glaucoma (Constitutional Factors). F. Masoud—p. 559

21 577 624 (Nov.) 1937

- Dialyzation of Intra Ocular Fluids. S. Duke Elder—p. 577
*Retinitis of Pregnancy. J. N. Duggan and V. K. Chitnis—p. 585
Recognition of Flashing Colored Lights by Persons with Normal and Defective Color Vision. H. V. Corbett and H. E. Roaf—p. 592
Norwegian Contribution to Diagnosis and Treatment of Glaucoma. S. Hagen—p. 597
Retrolbulbar Neuritis in Cases of Serous Meningitis. Elena Puscaru—p. 599
The Eye Hospital at Shikarpur India. R. Buxton—p. 605

Retinitis of Pregnancy—Duggan and Chitnis present three cases of retinitis of pregnancy, the first case represents the characteristic form of retinitis, the second case belongs to the group of toxemia of pregnancy complicated by chronic nephritis and the third one exhibits features resembling the first one, yet its nature remains obscure. There is only one type of retinitis which can be called retinitis of pregnancy, that described by Semple characterized by sudden onset, edema of retinal tissues, equally sudden cessation on removal of the cause and complete restoration of vision. Whenever chronic nephritis complicates pregnancy, the visual disturbances are due to renal retinitis. This retinitis is associated with high blood pressure, which, together with the signs of retinitis has a tendency to persist after delivery. This form of retinitis is a useful guide in differentiating chronic nephritis complicating pregnancy from preclampsic toxemia. It should really belong to the group of cases in which hypertension and chronic nephritis are present before pregnancy. Apart from their differentiating value lesions of the retina help in estimating the damage done to the vascular tree. In the presence of commencing retinitis, the ophthalmologist should not hesitate to advise interruption of pregnancy.

British Medical Journal, London

2 783 836 (Oct. 23) 1937

- Observation and Experiment and Physiology of the Stomach. A. Huttl—p. 783
Abscess of Lung. L. S. T. Burrell—p. 789
*Rapid Method for Isolation of Organic Poisons. Preliminary Note. C. P. Stewart, S. K. Chatterji and S. Smith—p. 790
Affections of the Eye with Relation to Skin Diseases. J. H. Doan—p. 792
Dermatologic Aspect of Affections of the Eye. C. B. Dowling—p. 794
Haemophilus Influenzae Meningitis. H. W. E. Jones—p. 797

Rapid Method for Isolation of Organic Poisons—Stewart and his co-workers find that in the extraction of alkaloidal poisons from the viscera the laborious and time-consuming Stas Otto process may be replaced by treatment of the minced

material with trichloroacetic acid. This at once yields a water-clear filtrate free from protein and fat, and containing the whole of the alkaloid originally present. From this filtrate the alkaloid can be removed by adsorption on kaolin, from which after neutralization it is eluted by hot chloroform. After removal of the alkaloids, barbital can be adsorbed on charcoal and eluted with ether. The method is being tested further and extended to other organic poisons.

Clinical Journal, London

66 439 482 (Nov.) 1937

- Diagnosis of Ectopic Gestation W T T Haultain—p 439
Abdominal Pain in Childhood W Sheldon—p 442
Preoperative and Postoperative Irradiation in Malignant Disease W S Handley—p 449
Retention of Urine K H Watkins—p 452
Pharyngeal Diverticula P J Moir—p 456
Diagnosis of Scarlatina Group G W Ronaldson—p 461
*Clinical Aspects of Tuberculous Cervical Lymphadenitis B C Thompson—p 466

Clinical Aspects of Tuberculous Lymphadenitis—Thompson maintains that tuberculosis of the peripheral lymph nodes has decreased considerably during the past quarter of a century, possibly more than any other form of tuberculosis. Nevertheless, it still remains a relatively common disease and in Great Britain is by far the commonest cause of chronic massive enlargement of the lymph nodes. Any large persistent swelling of the lymph nodes of the neck without an obvious local focus is to be regarded as tuberculous until proved otherwise. In 324 cases of peripheral tuberculous lymphadenitis the author has found the supraclavicular and axillary lymph nodes affected only one third as often as the upper cervical group. This form also showed a tendency to appear later in life, with a maximal incidence at the age of 15, compared with nine years in the latter type. More than half of this group showed x-ray evidence of intrathoracic tuberculosis, which usually took the so-called childhood form, with one or more small foci in the periphery of the lung and massive enlargement of the tracheobronchial lymph nodes. Calcification was usually present in these lesions. Much less commonly the associated pulmonary disease was of the adult type, with extensive cavitation and fibrosis and no mediastinal adenopathy. By reason of its pulmonary origin and the associated tracheobronchial disease, tuberculosis of supraclavicular and axillary lymph nodes has a significance quite different from that in the nodes of the upper part of the neck. It should, of course, be remembered that tuberculosis tends to spread from one group of lymph nodes to the next, by either normal or retrograde paths. Those unusual cases in which tuberculosis involves simultaneously the upper cervical and tracheobronchial lymph nodes, between which there is no direct anatomic connection, are probably due to concomitant infection of both the upper and the lower parts of the respiratory tract.

Indian Medical Gazette, Calcutta

72 585 648 (Oct.) 1937

- Circumscribed Outbreak of Typhus-like Fever in Muzaffargarh District, Southwestern Punjab Note M Yacob—p 585
Anemia of Pregnancy S Mitra—p 586
Structural Changes in Parathyroids in Vitamin Deficiency R K Pal—p 593
*Lead Poisoning from Lining of Copper or Brass Cooking Utensils Report of Case M Sen—p 595
Chemistry of Calcium in Tuberculosis S K Sen—p 598
Relation of Systemic Blood Pressure to Intra Ocular Pressure J N Jaswal—p 602
Transplantation of Ureters into Pelvic Colon K V Ramana Rao—p 603
Guinea Worm H S Trewn—p 606
Spinal Anesthesia S A Malik—p 609
Occurrence of Weil's Disease in India B M Das Gupta and R N Chopra—p 610

Lead Poisoning from Cooking Utensils—Sen reports a case in which a person bought new metal cooking pots in March 1936 and, having had them lined (with tin and lead) used them from April. In May attacks of colic, abdominal distention and diarrhea began and these became worse in June. He recovered from the attack, possibly because the lead from the lining had been removed and he had by then excreted the poison from his system. The symptoms recurred with greater severity about the end of September after more utensils were lined. He then had been using the newly lined cooking pots

for a couple of weeks. This time the attack was acute and his admission to the hospital apparently saved him from a much worse attack. From the fact that when the patient left the hospital there was little left of the lining of the pots it could be surmised that a large portion must have become dissolved in the articles cooked within a couple of weeks of beginning to use these pots—hence the acuteness and the severity of the symptoms. The fact that the patient was living largely on milk probably prevented him from suffering complications, as he was unwittingly administering to himself the antidote with the poison. With regard to lead poisoning, no systematic study has been made of its incidence and prevention as an occupational disease. It is suggested that an organized inquiry might be held into the question of lead poisoning of the workmen engaged in lining these pots and also of the persons who use them for cooking. It is possible that legislation might be found advisable to prevent such poisoning.

Weil's Disease in India—The workers who have successfully cultivated *Leptospira* from the blood of patients with Weil's disease are inclined to the view that successful results are obtained only when the blood cultures are taken within the first seven days of illness. Das Gupta and Chopra obtained a positive blood culture as late as the ninth day (from what they believe to be the first case in India), but the guinea pigs inoculated at the same time proved refractory to infection. Although found in fairly large numbers in the urine, the leptospirae were always immobile and most of them showed varying degrees of degeneration. This is probably due to the presence of plenty of bile (which has a lytic action on *Leptospira*) still present in the urine.

Lancet, London

2 835 890 (Oct. 9) 1937

- Injection Treatment of Inguinal Hernia Report on 100 Cases A E Porritt—p 835
*Gold Treatment of Arthritis Review of 900 Cases S J Hartfall and H G Garland and W Goldie—p 838
Absorption and Excretion of Estrone by Human Organism T Kemp and K Pedersen Bjergaard—p 842
Transformation of Male Sex Hormones into a Substance with Action of Female Hormone E Steinach and H Kun—p 845
*Macroscopic Agglutination Test for Diagnosis of Weil's Disease J Smith and W J Tulloch—p 846
Control of Postoperative Urinary Retention with Doryl R Officer and J C Stewart—p 850

Gold Salts in Treatment of Arthritis—Hartfall and his colleagues have employed chrysotherapy in the treatment of 900 cases of arthritis, 750 of which were of rheumatoid arthritis. They maintain that preparations of gold constitute the best single form of treatment in rheumatoid arthritis. They are still unable to predict toxic reactions, although they are at present investigating a patch test which appears to be giving promising results. The factors on which toxic reactions depend are still unknown, but from their experience they feel justified in drawing the following tentative conclusions. Certain individuals undoubtedly show an idiosyncrasy to gold salts, developing multiple reactions after small doses, and these patients are presumably unsuitable for treatment. In others there are no doubt several factors, dosage is of some importance. The maximal single dose should not be more than 0.1 Gm and a course of injections should not consist of more than 1 Gm. At the same time larger doses produce even more striking results. It is probable that some preparations of gold are more toxic than others, but their toxicity does not appear to be dependent on the route of injection. Age and sex severity and duration of the disease appear to have no bearing on the frequency of reactions nor has any relationship been found between the blood sedimentation rate and the development of toxic reactions. There are a few real contraindications to treatment with gold salts: any history of previous purpura or agranulocytosis appears to be an absolute contraindication as is gross renal or hepatic disease. Rheumatoid arthritis, if seen in its early stages can be cured by gold salts, and there are few cases that cannot be improved to some extent. Any acute nontraumatic monarticular arthritis should be regarded as the possible forerunner of widespread and severe rheumatoid arthritis. Every patient should have at least two courses of injections and a persistently raised blood sedimentation rate is an indication for further treatment with gold salts.

Agglutination Test in Weil's Disease—Smith and Tulloch point out that in view of the experience of one of them (Tulloch) when investigating the agglutination reactions of separated bacterial flagella it seemed probable that, although cultures of *Leptospira* do not show much turbidity before exposure to antibodies, they could, on such exposure under suitable conditions, produce floccules that would be seen easily. It is possible to prepare a suspension of bacterial flagella which is virtually transparent although it contains enormous numbers of these structures. When such transparent flagellar suspensions are exposed to their appropriate (antiflagellar) serum, floccules are formed which can be seen by the naked eye, if indirect illumination is employed. In view of what is known concerning the mechanism of agglutination, it seemed highly probable that once the leptospirae were sensitized by their appropriate antibody they would not exhibit the same tendency to fragmentation on exposure to heat as they do in the unsensitized state. Should this be so, incubation at a temperature between 30 and 37 C—sensitizing incubation—could be followed by a short exposure to 55 C—flocculating incubation—in order that the rapidity of the reaction might be increased. Actually this proved to be the case. Comparative tests were made with the Schuffner procedure and the macroscopic agglutination method and the results for the two were remarkably alike. The lytic action of the Schuffner technique is not complete and apparently interferes in no way with the interpretation of the macroscopic test. The end titer of an immune serum is somewhat difficult to determine without considerable practice when the darkfield method is employed, but no particular dubiety occurs in connection with the interpretation of the macroscopic method. The ease with which macroscopic tests can be carried out and interpreted demands special emphasis, since this makes possible a much wider application of serologic methods to the study of leptospirosis, both in man and in rodents.

Medical Journal of Australia, Sydney

2 543 584 (Oct. 2) 1937

Galen, the Medical Dictator. His Life and Influence on Progress of Medicine. L. Cowlishaw—p. 543

*Schizophrenia and Its Treatment by Insulin and 'Cardiazol'. R. S. Ellery—p. 552

Antitoxin of Capillary Vascular Disease. A. A. Abbie—p. 564

Use of Adrenalin in Vaginal Plastic Operations. Note. R. I. Furber and A. R. H. Duggan—p. 568

2 555 630 (Oct. 9) 1937

Common Problems in General Practice. C. W. Ashton—p. 585

Sydenham's Chorea. Its Cause and Relationship to Rheumatic Fever. S. Williams—p. 590

Doctors and the Law. D. M. Morton—p. 593

Effect of Drinking Water on Lead Poisoning in Experimental Animals. G. Croll—p. 598

A Voyage from Plymouth to Adelaide in the Forties. Impressions of a Ship's Surgeon. K. M. Brown—p. 600

Alterations to Footwear. N. Little—p. 603

Schizophrenia and Its Treatment by Insulin and Metrazol—Ellery discusses the many methods of previous empirical treatment of schizophrenia and concludes that the whole point about the empirical organic procedures of the past is that, while it is better to apply treatment which will achieve sporadic success and a certain amelioration of symptoms than to stand by resignedly, not one of the methods is capable of giving results consistently better than those which are liable to occur spontaneously, if one accepts the dictum that such remissions occur in approximately 20 per cent of unselected schizophrenic patients. Complete details are given of insulin shock (Sakel) and metrazol convulsion (Meduna) therapy. To the unfamiliar observer hypoglycemic shock therapy may look particularly dangerous and somewhat cruel. However, in the hands of a competent physician who has familiarized himself with all aspects of the treatment, the dangers are often more apparent than real. From the patients' point of view the treatment is neither perilous nor painful. Amnesia prevents them from remembering any of their more distressing symptoms. Almost invariably patients gain weight and begin to feel more physically fit. This together with the return of lucidity, more than compensates for any initial discomfort they may have experienced. By the proper use of the insulin shock treatment one is now able to anticipate some 70 to 80 per cent full remissions in schizophrenic patients whose illness is of less than

six months' duration, and approximately 60 per cent of full remissions in those whose mental disorder has persisted for not more than eighteen months at the time of treatment. For patients who have been ill for longer than eighteen months the chance of achieving a remission diminishes rapidly as the length of the illness increases and as defect symptoms are manifest, but from the not altogether negligible number who do seem to recover, nearly 50 per cent show varying signs of improvement. With metrazol therapy in 50 per cent of unselected cases, in which the length of illness has varied from one week to ten years, a good remission has been obtained. In especially early cases, before the onset of permanent symptoms of mental deterioration, the reaction to this form of treatment has been most favorable, and Meduna states that he has brought about a remission in 80 per cent of such cases. Reviewing his results in individual cases, he finds that a good response may be anticipated in schizophrenic patients in whom symptoms have not persisted for more than four years. He has failed absolutely to produce any good results in patients whose symptoms have persisted for a longer time. The best responses to metrazol have been achieved in the catatonic and hebephrenic types of schizophrenia. Until results are published Meduna's figures must stand, a challenge to the modern psychiatrist confronted with the schizophrenic problem. Conclusions are drawn from both methods of treatment. The epileptic state is common to the two procedures, and a tentative suggestion is put forth that this may act by changing the biochemical milieu of the human organism in a beneficial way not yet understood, or that it may act merely as a shock, serving by its very intensity to bring the patient into a state of dependence, so that he can obtain benefit from the individual attention of those around him, together with common sense psychotherapy consciously or unconsciously applied by the physician.

Epinephrine in Vaginal Plastic Operations—It has been the custom of Furber for eighteen years to inject into the superficial tissues a 1:350,000 solution of epinephrine hydrochloride in physiologic solution of sodium chloride when doing vaginal plastic operations. The procedure eliminates the continuous drip method, maintains a clear field (which favors greater accuracy of dissecting and suturing) and diminishes loss of blood. The original method of the continuous drip allowed a large volume of saline solution to flow over the operative field, carrying away an unknown and often large quantity of blood from the dissected tissues. The solution spreads in a natural plane of cleavage, and dissection is greatly facilitated. For a cystocele of average size about 10 cc of solution is required, and a similar amount for an average cervical repair. It has been suggested that reactionary hemorrhage and delayed union or malunion of the tissues might follow the use of such a method. Furber and Duggan have watched carefully and have never experienced the former, and they have been unable to observe any change in the uniting powers of the tissues in several hundred cases. Their share of secondary hemorrhages has been no more than that experienced by most gynecologic surgeons.

South African Medical Journal, Cape Town

11 663 706 (Oct. 9) 1937

Visceral Disharmony. E. G. Dru Drury—p. 665

Stokes Adams Syndrome. S. de Boer—p. 674

Medicine in the Old Testament. L. P. Bosman—p. 678

Journal of Oriental Med., Dairen, S. Manchuria

27 37 100 (Oct.) 1937. Partial Index

Microscopic Studies on Innervation of the Lung. S. Hayasi—p. 3

Absorption of Specific Precipitable Substance in Blood. Part III

Experiments with Antihuman Hemoglobin Precipitin. Wang Shih Kong—p. 80

Antigenicity of Diphtheria Toxoid Administered in Different Forms. K. Manabe—p. 82

A New Culture Medium for Type Differentiation of Diphtheria Bacilli. G. Itoyama—p. 83

Thrombophlebitis Occurring in Typhus and Typhoid. Three Cases. T. Matsumura, M. Sugiyama and S. Eguchi—p. 89

Typhoid Accompanied by Noma. Case. S. Eguchi—p. 90

Ascorbic Acid Value of Vegetables and Fruits in Dairen. T. Shikata and M. Kobayashi—p. 91

Seasonal Changes of Vitamin C in Vegetables. F. Tanabe—p. 93

Appendicitis with Transposition of Viscera. Two Cases. S. Ito, T. Shoji and R. Sumigawa—p. 96

Presse Medicale, Paris

45 1555 1578 (Nov 6) 1937

- *Vascular Reactions of Brain in Course of Solid and Gaseous Embolisms
Experimental Study on Cerebral Vascular Spasms M Villaret R
Cachera and R Fauvert—p 1555
- *Method of Roentgenographic Sections Tomography or Planigraphy
Applied to Cancer of Larynx G Canuyt and Gunsett—p 1559
- Effects of Contrast Medium in Roentgenologic Exploration of Viscera
E L Lanari M E Jorg and J A Aguirre—p 1562
- Technic of Metallic Osteosynthesis Applicable in Fractures of Leg and
of Long Bones P Alglave—p 1566
- Congenital Pachyonychia with Keratoderma and Disseminated Keratoses
of Skin and of Mucous Membranes A Touraine—p 1569
- Operative Indications and Technic of Intervention in Fractures of
Lumbar Transverse Processes R Dupont and H Eyraud—p 1573
- *Pneumographic Study of Tumors of Lateral Ventricle H Askenasy—
p 1576

Study on Vascular Reactions of Brain—Studies made by Villaret and his associates demonstrate the opposition that exists between intense reactions in the arterioles of the pia mater in case of solid embolism and the complete absence of vasomotor response at the time of gaseous embolism in the same vessels. Their experiences on solid cerebral embolism make it possible for them to make evident in an objective manner a phenomenon the significance of which has often been invoked and denied in neurology but the existence of which, in the form of spasm of the cerebral arteries, had never been verified. Henceforth, its authenticity cannot be doubted. However, in view of the short duration of the observations and of the absence of anatomic controls, the authors regard all physiopathologic deductions on this subject as premature. On the other hand, they stress the importance of their observations for the physiologic problem of cerebral vasomotoricity. They brought the proof of the possibility of producing spasms of the cerebral vessels by direct endovascular excitation, just as Riser had emphasized the existence of spasms by exogenic, either mechanical or electrical, irritation. The experimental gaseous embolism of the brain demonstrated, on the other hand, the complete indifference of the arteriolar walls to the embolized air bubbles. The authors were never able to demonstrate cerebral vasoconstriction in these conditions. The hypothesis of vascular spasms, often invoked recently to explain the nervous accidents of gaseous embolisms, do not seem to be well founded. The authors further state that they were able to demonstrate in the same animal, first, the complete inertia of an arteriole of the pia mater to a gaseous embolism and then the spasmodic reaction of the same vessel to solid cerebral embolism, namely, to the injection of pulverized pumice stone. However, these investigations nevertheless make apparent the possibility of an essential phenomenon in the course of gaseous embolism, namely, the circulatory arrest. Provoked by the air, which acts like a tampon and interrupts the circulation of the blood, this arrest elicits in the involved arterial region a temporary ischemia which, if prolonged, may no doubt cause grave alterations in elements as sensitive as the nerve cells. The authors think that the local mechanism of accidents resulting from gaseous embolism of the brain is a cerebral ischemia, which in turn is elicited by gaseous obstruction.

Tomography Applied to Cancer of Larynx—Canuyt and Gunsett point out that the method of roentgenologic sections (tomography), which has been found helpful in the diagnosis of pulmonary disorders, is helpful also for the examination of the larynx. It permits a comparison of the right and left side of the larynx. In applying it in pathologic disorders of the larynx and particularly in laryngeal cancer, the authors obtained encouraging results. No other method gave as precise results as did tomography and they conclude that this method represents a considerable progress in the study of the localization and extension of cancerous lesions of the larynx.

Pneumographic Study of Tumors of Lateral Ventricle—Askenasy points out that the ventriculography with injection of air, that is the pneumography of the cerebral ventricles is chiefly the work of Dandy and that this method has greatly modified the diagnosis, therapy and prognosis of the tumors of the lateral ventricle. On the basis of his own experience with this method he says that from the characteristics of the ventriculogram it seems possible to distinguish the primary intraventricular tumors from tumors that have invaded the lateral

ventricle secondarily. In the primary intraventricular tumors it is necessary to differentiate between the neoplasms situated at a distance from the interventricular foramen and those located near this foramen. The first ones determine the exclusion of that part of the ventricle which is located back of the tumor and this closed cavity is the site of a considerable dilatation. The second type of tumors, those located near the interventricular foramen, elicit a hydrocephalus that extends over the entire ventricle of the diseased side. These, however, do not generally cause a marked deformation or displacement of the lateral ventricle. In extraventricular tumors, which cause an external stenosis of the interventricular foramen (meningiomas of the small wing of the sphenoid, temporal gliomas and so on), the ventricular hydrocephalus is located on the healthy side, whereas the diseased lateral ventricle is collapsed by the cerebral edema. The secondary intraventricular neoplasms do not cause interruption of continuity in the image of the ventricle of the diseased side. The external wall of the ventricle is deformed by a mass coming from outside and the hydrocephalus, if it exists, is always much less marked than in the case of primary intraventricular tumor.

Gazzetta Internazionale di Med e Chir, Naples

47 643 678 (Oct 31) 1937

- *Renal Elimination of Bacteria Injected in Blood A Ligas—p 643
- Ambulant Treatment in Cutaneous Diseases M Agostini—p 655

Renal Elimination of Bacteria Injected in Blood—Ligas experimented on rabbits inoculated with bacterial broth cultures directly in the left ventricle or in the marginal vein of the ear. The bacteria administered were staphylococci, streptococci, pneumococci and bacilli of the coli and paracoli groups, in doses of about 1,000 bacteria for each kilogram of body weight. The urine was withdrawn by puncture of the bladder at intervals which varied from three minutes to ninety-six hours after inoculation. The sterile quality of the urine was verified before the inoculation. Cultures were made from the urine, bile, blood, kidney and spleen of the animals that died spontaneously or were killed. The different bacteria were identified. The author concludes that the kidney eliminates bacteria as though it were an inert body for the first forty-five minutes. When the bacteria are in contact with the kidney for more than forty-five minutes, anatomic lesions develop in the structure. The time of elimination varies with different bacteria. The colon bacillus and the streptococcus are eliminated in the urine three minutes and forty-five minutes, respectively, after inoculation in the blood. The passage of bacteria through the kidney induces biologic reactions of a physiologic type if bacteria are in contact with the kidney for a short time and of a pathologic type if the contact is prolonged.

Giornale di Clinica Medica, Parma

18 1303 1400 (Oct 30) 1937

- Indicanuria in Nephropathies L Supino—p 1303
- *Inflammatory Reactions in Course of Bronchopneumonia in Leukemia
M Dreyfuss—p 1311
- Experimental Osteomyelitis from Colon Bacillus L Mezzana—p 1342
- Hepatomegaly a Sequel to Undulant Fever Clinical Study G Drei—p 1368

Inflammatory Reactions of Lung in Leukemia—Dreyfuss made a microscopic study of the lung in four cases of bronchopneumonia in the course of leukemia. In one case of fibrous bronchopneumonia, complicated by the presence of many micro abscesses degenerated polymorphonuclear leukocytes predominated in the intra-alveolar exudates. There were a few lymphocytes and histiocytes. In the remaining three cases there was a leukemic reaction with proliferation of leukemic cells and histiocytes and the presence of a few polymorphonuclear granulocytes or no granulocytes at all. According to the author, the mesenchyma of the lung is frequently and intensely involved in the process of leukemia. It reacts by means of proliferations around the vessels and bronchi and at the nodules and intra-alveolar septums. The cellular picture of bronchopneumonia in leukemia depends on the functional condition of the organs concerned with the defense of the cells. When the organism can still fulfil the functions of granulopoiesis, the lung reacts to the stimulation of the inflammation by the production of exudates which are rich in polymorphonuclear leukocytes.

If the activity of the granulopoietic functions is diminished, the reticulo-endothelial system of the lung reacts by the production of leukemic cells and histiocytes, which form the interalveolar exudates in cases of this nature. If leukemic metaplasia is not advanced and if it is still reversible, the lung will show a microscopic picture of histiocytic alveolitis. If the functions of the reticulo-endothelial system of the lung are disturbed by the intensity of the leukemic metaplasia, immature leukemic cells prevail in the exudates, and sometimes they are the only cells which form the interalveolar exudates. Grave leukemic metaplasia inhibits the organic cellular defenses with consequent paralysis of the reticulo-endothelial system of the lung and absence of local cellular reaction.

Riforma Medica, Naples

53 1437 1468 (Oct. 9) 1937

*Autohemotherapy in Paralysis of Ocular Muscles R Campos—p 1439

*Experiments on Detoxicating Action of Aminoacetic Acid for Arsphenamine A Versari—p 1443

Pure Alexia Case G Palomba—p 1445

Autohemotherapy in Paralysis of Ocular Muscles—Campos reports satisfactory results from autohemotherapy in two cases of paralysis of the ocular muscles following hemiplegia of nuclear origin. The technic is as follows: Twenty cubic centimeters of blood is taken from a vein of the patient's arm and immediately reinjected at the gluteal region, which is then massaged for some time. The injections are given at intervals of two days alternately on each side of the gluteal region up to ten injections. The condition of the author's patient was slowly but progressively aggravated during the first month before he resorted to autohemotherapy. The latter induced in both cases complete regression of the symptoms and functional reestablishment in about one month. The treatment is simple and harmless.

Detoxicating Action of Aminoacetic Acid for Arsphenamine—Versari experimented on two groups of rabbits, which were given 0.25 and 0.35 Gm, respectively, for each kilogram of body weight, of arsphenamine dissolved in 5 cc of a 4 per cent solution of aminoacetic acid in distilled water. In the first group the largest number of animals survived the experiment and showed no organic alterations when they were killed, three months after the experiment. Of the animals that died, death occurred between the first and seventh days. All the control animals in the group which were given the same amount of arsphenamine without any aminoacetic acid died during the first two days of the experiment. In the second group, all the animals but one died between the fourth and fourteenth days of the experiments. The controls in the group died within seven days. The author concludes that the toxicity of arsphenamine is greatly diminished if aminoacetic acid is simultaneously administered. He believes that it synthesizes arsphenamine into a new product that is eliminated from the organism later on in the course of the reaction.

Prensa Medica Argentina, Buenos Aires

24 2045 2090 (Oct. 27) 1937

Regression and Reabsorption of Cancer Tumors by Hydrolysates of Striate Muscle A H Roffo—p 2048

Foreign Bodies in Duodenum Clinical Study H Taubenschlag—p 2061

*Intolerance to Emetine with Skin Lesions R Lorenzo and Matilde Portnoy—p 2065

Biologic Treatment of Prolonged Endocarditis with Streptococcus Viridans L L Resio and I Berendorf—p 2071

Epithelioma of Vulva Cases P Ronchi M Mazza and J J Courts—p 2073

Intolerance to Emetine with Development of Cutaneous Lesions—Lorenzo and Portnoy report a case of amebiasis. Treatment with enterovioform resulted in the disappearance of *Amoeba histolytica* cysts and paracysts from the feces. An injection of 0.03 Gm of emetine hydrochloride was given each day for five consecutive days. The second injection was followed by a cutaneous reaction of the allergic type with the appearance of local eruption and an infiltrating reaction at the point of injection. The third injection was followed by a reaction of an anaphylactic type with shock and generalization of the eruption all over the body. The fourth and fifth injections caused intensification of the eruption. The

reaction subsided on discontinuation of the emetine injections and on administration of calcium and epinephrine. After a period of rest, three series of emetine hydrochloride injections were administered. Each series consisted of two injections of 0.03 Gm of emetine hydrochloride, which were given for two consecutive days and followed by an interval of rest. The skin reaction was less severe after the second and third series of injections and did not take place after the fourth series. The authors believe that their case was one of allergy of the type of cutaneous anaphylaxis which was due to repeated organic absorption of disintegrated bacterial matter.

Fortschritte der Therapie, Leipzig

13 537 592 (Oct.) 1937 Partial Index

*Treatment of Agranulocytosis H E Bock—p 537

New Methods for Treatment of Gonorrhea C Fischer—p 553

Bee Venom as Therapeutic R Schwab—p 560

Intestinal Extracts in Allergic Diseases L Adelsberger—p 568

Treatment of Agranulocytosis—Bock points out that heretofore agranulocytic conditions have been treated with roentgen irradiation of the long bones, repeated injections of nucleotide and profuse blood transfusions. However, in acute cases of agranulocytosis these measures rarely prove sufficient for the compensation of the lack of granulocytes during the first four severe days. In an extremely severe case of agranulocytosis, transfusions with blood of a patient who had leukemia were made. This was possible because a person of the same blood group who had myeloid leukemia was available as a donor. In this connection the author points out that Schittenhelm before him had resorted to the transfusion of the blood of a patient with untreated chronic myeloid leukemia in a case of agranulocytosis. He thinks that Schittenhelm was the first who proved that severe agranulocytosis could be successfully treated with leukemic blood. The difference between Schittenhelm's case and the one described here was that Schittenhelm gave only a single transfusion of leukemic blood, whereas in the reported case fourteen transfusions were given. In the latter case of agranulocytosis, in which angina, necrosis of the gums, pneumonia and later on abscess of the thigh developed, the destruction of leukocytes was extremely severe. The quantity of leukocytes transmitted to the agranulocytic patient in the course of the fourteen transfusions was equivalent to the quantity that would have been provided by 250 transfusions of ordinary blood. The author admits that not all patients with agranulocytosis require such enormous amounts of leukocytes nor does he think that all require leukemic blood. Regarding the leukemic donor, he says that withdrawal of blood and immediate replacement by normal blood are not harmful for a patient with chronic leukemic myelosis but may even exert a beneficial influence.

Klinische Wochenschrift, Berlin

16 1521 1560 (Oct. 30) 1937 Partial Index

Sympathetic Optical System E Scharrer—p 1521

Function and Functional Tests of Lung G Zaepfel—p 1523

*Clinical Aspects and Pathogenesis of Ketone Vomiting in Diabetic Children H Hungerland—p 1526

How to Furnish Morphologic Proof for Corticotrophic Hyperpituitarism E J Kraus—p 1528

Immunizing Efficacy in Malignant Diphtheria H Baar and N Kovacs—p 1532

Acute Symmetrical Cutaneous Gangrene in Scarlet Fever H Klan—p 1538

Influence of Cevitamic Acid on Blood Pressure M Kasahara and R Kawamura—p 1543

Ketone Vomiting in Diabetic Children—Hungerland reviews the literature on ketone vomiting and reports a case of his own observation. A boy, aged 5, had attacks of vomiting and the examination revealed a diabetic coma. The author points out that there are contradicting theories about the genesis of ketone vomiting. He cites Schiff's remark about ketosis. Schiff maintained that ketosis may be caused by an excessive production of insulin but also by a blockage or exhaustion of the carbohydrate depots. On the basis of this theory, Schiff rejected the administration of insulin as dangerous in cases of ketone vomiting. Other authors, Fanconi among them, found insulin helpful. To be sure Fanconi admits that during the first period of acetone vomiting insulin should not be given alone but together with carbohydrates. The author thinks that Fanconi's patients had diabetes mellitus. In this

connection he discusses the symptomatology of diabetic coma, particularly the occurrence of vomiting, and points out that vomiting is more frequent in children with ketonuria than in adults. Vomiting seems to occur no matter of what origin the ketonuria may be, whether caused by hyperinsulinism or by hypoinsulinism. Deficiency of carbohydrates, excess of insulin or shortage of insulin all may lead to a disturbance in the carbohydrate metabolism which results in ketonuria. Vomiting in children with diabetic coma is only a special form of ketonemic vomiting. In the conclusion the author directs attention to the fact that ketonemic vomiting develops only in a certain type of children but that in this type of children any of the aforementioned metabolic disturbances may elicit ketonemic vomiting. As regards the treatment the author says that depending on the genesis of the disorder, carbohydrates as well as insulin, or both, may be required.

Zeitschrift für experimentelle Medizin, Berlin

101 307-450 (Sept 20) 1937 Partial Index

Digestion Leukocytosis and Cerebral Regulation of Blood Picture H. Regelsberger and W. Kinkel—p 307

*Question of Postoperative Cerebral Vascular Shock Charlotte Frisch and H. Hoff—p 335

*Alteration of Muscle Chronaxia by Sympathetic Influences J. Weiser—p 339

Saturated Stearins in O. Bile R. Pertzborn—p 350

Epilepsy Produced by Pyrrole P. Rezek—p 359

Origin of Hyperglycemia in Duodenal Tolerance Test E. Lauschner—p 365

*Relation of Most Important Vitamins to Carbohydrate Metabolism H. Schroeder—p 373

Postoperative Cerebral Vascular Shock—Frisch and Hoff say that Hering demonstrated that in case of irritation at the site of the division of the common carotid artery a noticeable decrease in blood pressure takes place by way of the nerve of the carotid sinus. They themselves were interested in the question whether this process can be influenced by the pressure conditions within the cranium. They found that the carotid sinus reflex remains unchanged when the cranium and dura are opened or when hypertension is induced by kaolin. However this reflex disappears if a rather large amount of blood (30 cc.) is withdrawn from a cerebral vessel, whereas it remains unchanged in the case of withdrawal of a tenfold amount of blood from the peripheral vessels. In some instances there even develops a paradoxical reaction (slight increase in blood pressure). This reaction is caused by a central shock of the vasomotor centers. Thus it has been demonstrated that the carotid sinus reflex is dependent on a central regulating factor.

Alteration of Muscle Chronaxia by Sympathetic Influences—Weiser shows that the convulsions of tetany are not sufficiently explained by the calcium theory. He thinks that the regular concurrence of trophic and sympathetic disturbances and the dependence of tonus spasm and chronaxia on central influences suggest relations of the sympathetic disturbances and spasms to the regulatory centers in the brain stem. The demonstration of hypersensitivity does not fully explain the irritation of the muscle in tetany. Attention should be given also to chronaxia, for it is increased before the convulsion and has diagnostic significance. The chronaxia is increased in case of catheterization of the stomach, besides the hyperventilation at the onset of the examination and the possible alkalosis by the administration of acid in the further course, the mere touching of the gastric wall has an important part in the alteration of the conditions of irritation in the muscle which finally may become manifest in an actual spasm. The alteration must be explained as a reflex action. Irritation of the stump of the vagus leads in the animal experiment to a prolongation of the muscle chronaxia. This increase in the muscle chronaxia can be suppressed by the previous administration of atropine. In patients with signs of a sympathetic neurosis and in patients with hepatic disorders, chronaxia is unstable, it has a tendency to increase or is constantly increased. On the basis of clinical signs and of experimental observations, prolonged chronaxia is regarded as a sign of vagotonia. In exophthalmic goiter the chronaxia values are low.

Relations of Vitamins to Carbohydrate Metabolism—Schroeder investigated the relations of the most important vitamins to the carbohydrate metabolism and particularly the

action of the isolated vitamins on the disordered metabolism in diabetes mellitus. He says that a direct connection between diabetes mellitus and vitamin A is unknown. Carotene as well as vitamin A is found in the blood serum of diabetic patients, but during diabetic coma they disappeared from the blood. In view of the antagonism between vitamin A and thyroid secretion, it may be assumed that the carbohydrate metabolism is indirectly influenced by vitamin A. Vitamin B₁ has no effect on the blood sugar content. Nevertheless, a slight increase in tolerance for dextrose could be produced in diabetic patients by means of vitamin B₁. In this connection the author points out that the insulin-like action of yeast, which has been observed by several investigators, is probably due to the presence of lactoflavin, for the intravenous injection of lactoflavin reduces the blood sugar content of diabetic patients by 20 or 30 per cent. He further reports investigations on the action of vitamin B₁ and of lactoflavin on the growth and the glycogen content of various organs of rats which had B avitaminosis. Whereas the glycogen content of muscles and heart remain practically constant during the B avitaminosis, the glycogen content of the liver decreases. However, the weight as well as the glycogen content of the liver increases in these rats with B avitaminosis as soon as pure vitamin B₁ is administered by subcutaneous injection. If a mixture of vitamin B₁ and of lactoflavin is given, the result is the same. The increase in weight that can be produced by the administration of vitamin B₁ can be inhibited by the simultaneous administration of dextrose. This can be explained by the dependence of the vitamin B₁ requirements on the carbohydrate metabolism. Studies on the modification of the carbohydrate metabolism by vitamin C revealed that the injection of 300 mg of cevitamic acid regularly reduces the blood sugar of normal persons. This modification of the blood sugar content is lacking in patients with increased vitamin C requirements. The author suggests that the action of vitamin C on the blood sugar of healthy persons might be explained by the observed inhibition of the insulin antagonist thyroxine. However, this inhibition must take place indirectly, for a direct modification of the action of thyroxine by cevitamic acid proved impossible in the experiment. In elimination experiments following oral tolerance tests with 300 mg of cevitamic acid daily, it could be proved that patients with diabetes mellitus have greater vitamin C requirements than have normal persons. Observations on the blood sugar prove that the action of insulin is increased by cevitamic acid. That vitamin D is involved in carbohydrate metabolism is proved by the fact that ultraviolet irradiation effects a reduction in the sugar content of blood and urine of diabetic patients.

Wiener klinische Wochenschrift, Vienna

50 1443-1474 (Oct 22) 1937 Partial Index

Biologic Foundations of Problem of Male Climacteric Pathogenesis and Glanular Therapy of Hypertrophy of Prostate L. Moszkowicz—p 1444

Intravital Microscopy of Unstained and of Vitrally Stained Mucous Membrane J. Pick—p 1449

Colloid Chemical Processes in Artificial and Spontaneous Thrombosis E. Friedlander—p 1451

*Problem of Anemia After Gastric Resection M. D. Manizade—p 1455

Wide Aorta of Congenital Origin S. Kreuzfuchs—p 1458

Chylothorax Case M. Szajna—p 1460

Anemia After Gastric Resection—Manizade points out that progress in research on anemia has proved the importance of gastric digestion for the blood and thus has corroborated the objections of internists to gastric resections. It has been asserted that the so called resection anemias may develop from five to ten years after the intervention. In order to determine the incidence of anemia after gastric resection, the author examined the blood of forty patients who from five to twelve years previously were subjected to an extensive gastric resection on account of ulcer. In the majority of patients the operation had been performed more than seven years before. The operation and the microscopic examination had demonstrated the existence of a peptic ulcer in all the patients. The patients were of various ages (from 23 to 67 years). Three of them had been operated on according to Billroth's first method all others according to Billroth's second method. All the resections had been extensive (two thirds resections). The examination

of the blood revealed in thirty-six of the forty patients that the number of erythrocytes was above 45 million, the hemoglobin values were likewise normal. Only four of the patients (10 per cent) had an anemic blood picture. Thus it may be concluded that gastric resection in patients with ulcer does not necessarily lead to anemia, although in some cases of gastric resection a predisposition together with secondary digestive disturbances may result in anemia. This possibility makes it necessary before the operation to pay attention to such factors as heredity, constitution, blood picture and gastric juice, and after the operation to watch carefully for the development of digestive disturbances and to institute promptly the proper treatment.

Nederlandsch Tijdschrift v Geneeskunde, Amsterdam

81 5387 5502 (Nov 6) 1937 Partial Index

Correction of Myopia W P C Zeeman—p 5391

Color of Eyes and Tuberculosis H Sandra—p 5401

Chronic Pyodermites J A Folsomers—p 5408

*Clinical Value of Epinephrine Probe Test of Muck H A E Van Dishoeck—p 5415

Clinical Value of Epinephrine Probe Test—Van Dishoeck shows that the white streak sign in Muck's epinephrine probe test is positive in a large number of cases in which a disturbance of the sympathetic nervous system exists. However, the clinical value of this test is limited by several factors: 1 By the fact that the white streak sign appears in various and rather frequently occurring disorders, thus the streak sign is not pathognomonic for a definite disease. 2 By the fact that, although the white streak sign appears in a large percentage of cases with sympathetic disturbances, it does not appear in all of them. 3 By the fact that it is elicitable in a considerable number of normal control cases. 4 By the fact that the technic is difficult and requires considerable experience. In unilateral cranial injuries, the white streak sign was often elicitable, usually on the side of the lesion. Because of this, the epinephrine probe test might be of value in the localization of cerebral process. The test is valuable also for the study of the complicated reactions of the nasal mucosa.

Hospitalstidende, Copenhagen

80 1097 1116 (Oct 5) 1937

*Nephroptosis Its Recognition and Treatment H Mathiesen—p 1097
Sepsis in the New Born Case P N Damm—p 1112

Recognition and Treatment of Nephroptosis—Mathiesen emphasizes the importance of pyelography, especially vertical pyelography, in cases of possible nephroptosis, and prefers vertical pyelography whenever possible. He says that in suitable cases excellent results can be attained by operative treatment. The indications are grave, constant colic, affecting the patient's ability and desire to work, nephroptosis combined with beginning or developed hydronephrosis or with aberrant blood vessels or cord formation, or complications with nephrolithiasis or recurring pyelitis. The contraindications are advanced age and poor general condition due to causes other than the nephroptosis. The procedure that he now follows is to split the capsule over the lower part of the convex edge of the kidney, bring the kidney into contact with the inner side of the lowest ribs as high as possible and suture the flaps of the capsule there. The outer capsule of the kidney is often gathered about the lower pole with catgut sutures. Occasionally it is necessary to turn the kidney so that the upper pole tips slightly downward, to allow the ureter to pass from the most sloping part of the kidney. When it is difficult to raise the kidney high enough, a strip of fascia lata 15 cm wide is transplanted, after the capsule has been slit over the lower pole, the fascia is sewed fast about this and the ends are passed through an incision in the eleventh intercostal space and sutured to the edges of the wound. He considers the partial decapsulation a particularly important step in nephroptosis, as the bloody surface best assures formation of firm adhesences between the kidney and its seat. The patient must remain in bed for at least three weeks and must not for some time after discharge do heavy work. Of the author's fifty patients with nephroptosis, twenty-five were treated with nephroptosis, of these, twenty are well, two improved and two unchanged and one is dead.

In five cases the ptosis was combined with aberrant renal blood vessels. Five cases are reported. The two improved and the two unchanged patients were operated on by other methods than the one described, all patients treated by this method are well.

80 1117 1144 (Oct 12) 1937

*Recurring Generalized Osteitis Fibrosa (Recklinghausen) with Parathyroid Adenoma and Diffuse Hyperplasia of Basophil Elements in Anterior Lobe of Pituitary Case S Franck and N Hjerrild—p 1117

Relation of So-Called Hysterical Reactions to Constitution Type I Ostenfeld—p 1130

Paroxysmal Tachycardia with Partial Atrioventricular Block in Child Aged 8 Years Case C Maarssø—p 1140

Recurring Osteitis Fibrosa—Franck and Hjerrild state that in this instance of generalized osteitis fibrosa with parathyroid adenoma and diffuse hyperplasia of basophil elements in the anterior lobe of the pituitary there was recurrence about four years after removal of an adenoma of the right parathyroid. Postmortem showed grave changes in different endocrine glands, especially an adenoma of the size of an almond in the left parathyroid, together with diffuse hyperplasia of the basophil cells of the anterior pituitary. The case leads the authors to the opinion that the parathyrotropic hormone of the anterior lobe of the pituitary is probably produced by its basophil elements.

80 1145 1172 (Oct 19) 1937

*Investigations on Effect of Extract of Anterior Lobe of Pituitary on Carbohydrate Metabolism in Normal Persons and Diabetic Patients H C A Lassen and L Hansen—p 1145

Irregular Glandular Hyperplasia of Endometrium Treated by Excision of Uterus K H Koster—p 1164

The Pituitary and Carbohydrate Metabolism—Lassen and Hansen state that injection of an alkaline extract of the anterior lobe of the pituitary can produce a marked diabetogenic effect both in the normal and in the diabetic organism, together with a considerable increase in ammonia elimination, the latter being presumably an expression of the presence of a ketogenic principle in the extract. The diabetogenic action is doubtful when only small amounts of protein and no carbohydrate are resorbed from the intestine. It is best demonstrated following the ingestion of meals with moderate carbohydrate and protein content. On intake of larger amounts of carbohydrate (about 75 Gm), either as pure dextrose or in a meal with abundant carbohydrate, the injection of the extract, whether intramuscularly or intravenously, cannot raise the peak of the curve, the diabetogenic effect appears in an increased width of the curve. Finally, the experiments indicate, but do not prove, that injection of extract of the anterior hypophysis can cause a transient fall of the sugar threshold of the kidneys in healthy persons with normal sugar threshold.

Ugeskrift for Læger, Copenhagen

99 1109 1140 (Oct 21) 1937

*Electrocoagulation of Lupus Vulgaris in Combination with Other Forms of Local Treatment V Genner—p 1109

Postoperative Tetany Treated with A T 10 Three Cases M Faber—p 1118

Therapeutic Reports from Practice V Erlendsson—p 1122
Fandoch V Halberg—p 1123

Treatment of Lupus Vulgaris—The different forms of local treatment of lupus vulgaris at the Finsen Institute are reviewed. Genner says that the Finsen treatment, given by a technically trained and competent personnel, is the main method of treatment and will under these conditions give the best results both as to recovery and cosmetically. Caustic ointment, surgical excision, diathermic excision and electrocoagulation are auxiliary methods. Regard for the cosmetic side must not be carried too far, where light treatment has not resulted in recovery after a reasonable time and recovery is believed possible, recourse must be taken to the more radical adjuvant methods named the time and the choice to be decided by the physician experienced in treatment of lupus. Electrocoagulation is a supplement that can advantageously be used in connection with light treatment, either as a preliminary treatment or later, in a limited number of cases in which other aids cannot be applied, as in order to destroy superficially isolated well defined nodules. Forty-two cases treated with electrocoagulation and observed for several years are tabulated.

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PATHOLOGIC FRACTURES

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Very little has been written on the subject of pathologic fractures. A brief but very good discussion was given by Key and Conwell.¹ Pathologic fractures are taken for granted, recognized and forgotten, perhaps justly so. Yet the question often arises whether a pathologic fracture is or is not present and the question must be disposed of before the diagnosis can be satisfactorily settled. Therefore a knowledge of pathologic fractures and of the relative importance of factors in their causation seems to us of sufficient importance to justify a review of such factors.

To this end we, assisted by Drs Galloway, Dickson, Sawyer and Rhorer, have reviewed the pathologic fractures encountered at the Mayo Clinic from Jan 1, 1924, to Jan 1, 1937, a period of thirteen years. We have found records of 660 pathologic fractures encountered in this period. For the purposes of this review we have divided these into three groups: (1) pathologic fractures attributable to metastasis from malignant lesions, (2) pathologic fractures attributable to primary malignant lesions of bone, and (3) pathologic fractures attributable to other causes, such as benign bone tumors and non-neoplastic diseases of bone.

In reviewing these cases, and particularly those of pathologic fracture from metastatic malignant growths, it was obvious that in a great number the vertebrae and ribs were affected. It is well known that many types of metastatic lesions are found in the ribs and vertebrae more commonly than in the other bones. Moreover, a careful review of these cases, and of the roentgenograms, has convinced us that these lesions produce pathologic fractures and they must be regarded as such.

We have not included any cases of tuberculosis of the vertebrae. We believe that occasionally a true pathologic fracture may occur in a tuberculous vertebra but it is so difficult to determine this fact in most cases of tuberculosis that we have not attempted to review any such cases. One case of true pathologic fracture of a clavicle, wherein tuberculosis was proved by biopsy, was included. It should be emphasized that such a condition is rare in our experience and the case is not recorded in any table accompanying this paper.

From the Section on Orthopedic Surgery (Dr Ghormley) and the Section on Roentgenology (Dr Sutherland), the Mayo Clinic.
Read before the Section on Orthopedic Surgery at the Eighty Eighth Annual Session of the American Medical Association, Atlantic City, N J, June 11, 1937.
1 Key J A and Conwell H E. The Management of Fractures Dislocations and Sprains. St Louis: C V Mosby Company, 1934.

In discussing the cases in which metastatic malignancy of various types was found, the predominance of lesions of the breast is obvious (table 1). This is as one would expect, because lesions of the breast are known to metastasize to bone frequently and pathologic fractures do occur. The greater number of these are metastases to the ribs and vertebrae, as we have already noted. However, other bones were affected, particularly those of the pelvis, the femur and the humerus. No cases in which metastasis involved the hands or feet were noted. The type of lesion is usually the so-called osteolytic type of metastatic lesion, although occasionally a lesion of the so-called osteoplastic type may be seen. In some instances in which extensive destruction of ribs and vertebrae was all that could be noted, the presence of a pathologic fracture was assumed. Any attempt to draw any actual conclusions as to the percentage of pathologic fractures in these cases seemed unwise for the obvious reason that in most cases of cancer of the breast with metastasis our observation of the patient was but for a short time. In many cases, perhaps all those in which metastasis to bone ultimately occurred, pathologic fractures also occurred. When such fractures involve the thoracic cage they may never be discovered unless carefully made roentgenograms are frequently studied, and this study is not done in most of these cases. Could all these cases have been followed through to the end and the number in which there were pathologic fractures thus determined, a fairly accurate basis for estimation of percentage might have been reached.

Of the cases designated "metastatic malignancy indeterminate" we feel that a number may have been cases of myeloma. These cases were, for the most part, those in which metastatic lesions of bone were recognized, without any discoverable primary malignancy. The patients usually were sent home without long periods of observation because it was recognized that little could be done for them. Unfortunately in few, if any, of these cases were there available reports of necropsy. On the other hand, there were in this group a few cases in which specimens of the lesion in the bone were taken for biopsy, with a resulting diagnosis of "metastatic carcinoma" or "adenocarcinoma," but in which the primary malignant growth could not be found. From the standpoint of exact etiology these cases too cannot be classified because the primary lesion in many of them never can be determined (fig 1).

The relatively small number of cases of carcinoma of the prostate gland is as one would expect. These metastatic lesions usually are osteoplastic and do not produce enough destruction of bone to lead to pathologic fracture. There may, however, be an occasional metastatic lesion of the osteolytic type, in which fractures may be found, and occasionally a fracture may be seen in a metastatic lesion of the osteoplastic type.

Metastatic lesions from hypernephromas (fig 2) always have been recognized as occurring frequently in bone metastases, and the number here noted as having produced pathologic fractures is relatively high, as the total number of cases of hypernephroma was small

TABLE 1—Metastatic Malignant Lesions Which Caused Pathologic Fracture, Jan 1, 1924 to Jan 1, 1937

Lesions	Patients Who Had Fractures
Carcinoma of breast	127
Metastatic malignancy, indeterminate	79
Carcinoma of the prostate	20
Metastatic hypernephroma	12
Carcinoma of the stomach	10
Carcinoma of the uterus	7
Carcinoma of the thyroid	6
Lymphoblastoma (including Hodgkin's disease)	6
Carcinoma of tongue and lip	5
Carcinoma of the pancreas	2
Carcinoma of the rectum	2
Carcinoma of the liver	1
Carcinoma of the sigmoid	1
Total	278

Among the remaining fractures caused by metastatic malignant lesions, the rather large number from carcinoma of the stomach should be noted. We say "rather large" because of the fact that bony metastasis from carcinoma of the stomach rarely is recognized. Of the latter group of cases, in two the diagnosis was proved by postmortem examination, in four by exploratory abdominal operation, and in the remainder the diagnosis was based on clinical and roentgenologic observations.

In reviewing table 2, which is concerned with cases in which there were primary malignant lesions of bone, the largest number of cases is represented, of course, by osteogenic sarcoma. For this paper we have included all types of osteogenic sarcoma, except endothelioma, in the one group. By this we mean fibrosarcoma, chondrosarcoma, myosarcoma and the mixed types of sarcoma. Again, we would emphasize that in many of these cases pathologic fractures may have appeared at a later date but at the time of our observation the incidence of pathologic fractures was that indicated here (fig 3).

TABLE 2—Primary Malignant Lesions of Bone Which Caused Pathologic Fractures, Jan 1, 1924, to Jan 1, 1937

Lesions	Patients with Fractures	Approximate Percentage of All Patients*
Osteogenic sarcoma	44	11
Myeloma	39	32
Endothelioma (Ewing's tumor)	23	19

* By "all patients" is meant all patients with each condition encountered. Example: Forty-four patients represent 11 per cent of all patients who had osteogenic sarcoma in the designated period.

Myeloma is of course recognized as a frequent cause of pathologic fractures. An extremely destructive lesion of bone probably always causes pathologic fractures if observed long enough. As we have already noted there may be, among the cases of metastatic malignant growths of indeterminate type, several cases of multiple myeloma. In the earlier stages the differential diagnosis often is difficult and unless Bence-Jones proteinuria is discovered, or a specimen is taken for biopsy, the diagnosis can sometimes be made only after prolonged observation, that is, repeated observations over several months (fig 4).

The relatively large number of cases of fracture associated with endothelioma of the Ewing type speaks for the destructive nature of this lesion. We have not

distinguished here between what may be primary Ewing's tumors and what may be metastatic lesions of the same type. Most of the pathologic fractures apparently occurred in primary lesions (fig 5).

Turning to the benign lesions which caused pathologic fractures (table 3), the largest group is what we call senile osteoporosis. This represents an entity which is now fairly readily recognized. The exact nature of the lesion, in our opinion, never has been accurately described. Schmorl² has given an accurate description of the pathology of this condition, pointing out that there are two essential conditions: first, compression fracture and, second, ballooning of the disks, which is made possible by softening of the vertebrae. To the resulting misshapen vertebrae he has given the name of "fish-tail vertebrae." Schmorl stated that there are various etiologic factors: different disturbances of nutrition, changes in mode of living or of the internal secretion and constitutional anomalies.

Judging from our observations, patients who have senile osteoporosis usually have complained of severe back pain. Often the onset has followed a slight injury.

TABLE 3—Benign Lesions Which Caused Pathologic Fractures Jan 1, 1924 to Jan 1, 1937

Lesions	Patients with Fractures	Approximate Percentage of All Patients
Senile osteoporosis	92	81
Osteitis fibrosa cystica	32	46
Giant cell tumor	2	21
Osteogenesis imperfecta	2	100
Osteomyelitis	2	1
Paget's disease	20	8
Bone cyst	11	10
Fibrosarcoma	12	0.5
Chondroma	11	4
Osteoporosis of disease	6	
Hyperparathyroidism	4	93
Osteomalacia	4	13
Hemangioma	3	
Total	269	

* By "all patients" is meant all patients with each condition encountered. Example: thirty-two patients represent 46 per cent of all patients who had osteitis fibrosa cystica in the designated period.
† Percentage based on count of all cases of osteoporosis.

and in many instances there have been several injuries. Some round back deformity often develops and gradually may increase until, in some instances, the stature becomes shortened. There is usually some degree of muscular spasm which may, in time, become very marked, in many instances the disability becomes great, some of the patients becoming bedridden. The lower age limit is usually 50 years, most of the patients are more than 60. However, we have seen at least one patient whose age was less than 40 years.

The characteristic roentgenographic picture in senile osteoporosis is diffuse osteoporosis, particularly of the vertebrae and pelvis, with compression fractures and ballooning of the intervertebral disks. The number of such compression fractures varies with the extent and severity and probably with the duration of the disease, as well as with the incidence of injury.

Many patients with senile osteoporosis have been suspected of having parathyroid tumors and exploratory operations have been performed without such tumors being found. However, as time goes on and experience accumulates, the differential diagnosis between this condition and the parathyroid tumor osteitis of von Recklinghausen is fairly simply made. In senile osteoporosis there is not any significant change in the chemical elements of the blood. Definite associated disease cannot

2 Schmorl, Georg. Die Gesunde und Kranke Wirbelsäule 172. B. gebild. Leipzig: Georg Thieme, 1932.

be found consistently. One can quiz such patients regarding diet and usually can convince oneself of a deficient intake of calcium. However, we feel that probably in many persons who are deficient in intake of calcium this disease never develops. Many important facts regarding this condition are yet to be determined.

The importance of senile osteoporosis as a clinical entity is evident at least in the fact that in this series



Fig 1.—Pathologic fracture in a case of metastasis from a carcinoma of the thyroid

of cases except for metastasis from carcinomas of the breast it was the most common cause of pathologic fractures. That it produces disability, often severe enough to make the patient an invalid, is obvious. Many patients are less severely disabled but in all cases the disability is pronounced and pain is persistent when the patient is up and about.

Usually the pain of senile osteoporosis is relieved by rest. In our experience, the condition of many patients has been improved by persistent use of a diet high in calcium or by administration of calcium, together with some form of vitamin D. At the same time, we have used a Taylor brace or heavily stayed corset to support the spinal column. Such treatment must be kept up for many months to accomplish any improvement. The subjective improvement has been more striking than the objective improvement is oftentimes in spite of apparently genuine subjective improvement little evidence of actual improvement is to be found in the roentgenograms.

We find that next to the largest group of these bony lesions is osteitis fibrosa cystica. It is not our purpose to discuss the differential diagnosis of osteitis fibrosa cystica, von Recklinghausen's type of osteitis fibrosa which we have here designated as hyperparathyroidism, giant cell tumor and bone cyst. We admit the difficulty in this differential diagnosis at times. In this series we have attempted to group them as indicated. Among those lesions designated as osteitis fibrosa cystica are for the most part the multiple lesions usually found in childhood. Such lesions often involve the shafts of the long bones sufficiently to cause weakness such that fractures are easily incurred.

Giant cell tumors often are causes of pathologic fractures. One who is familiar with this lesion knows that as they increase in size they often cause thinning of the cortex to the point at which pathologic fracture is inevitable. Occasionally the portion of a joint surface adjacent to the lesion may cave in and produce a fracture.

In considering osteogenesis imperfecta we have not attempted to distinguish the variously designated causes of brittle bones such as osteopetrosis, fragilitas ossium, brittle bones and blue sclerae, and osteogenesis imperfecta. To us it seems that the dividing line between any two of these groups is not clearly defined and for purposes of this presentation the lesions can be grouped as one. The underlying cause may be that described by Key,³ namely, hereditary hypoplasia of the mesenchyme. This seems to us the most logical concept when the pathologic picture is considered. From the standpoint of this paper, the important thing to realize is that probably, in all these cases, at some time or other pathologic fractures occur. Our patients did not all present themselves at the time when fracture occurred but all gave histories of having had fractures at some time.

In the presence of osteomyelitis, fractures are often hard to recognize. There are in general two types of pathologic fracture in these cases, namely, those that result from extensive destruction of the bony cortex



Fig 2.—Pathologic fracture in a case of metastasis from a hypernephroma

and those that occur as a result of weakening of the bone by surgical removal of bone. The former group is by far the largest (fig 6). The possibility of post-operative fracture must always be considered in cases of osteomyelitis and proper support must be given when extensive surgical procedures are performed.

³ Key, J. A. Brittle Bones and Blue Sclera. *Arch. Surg.* 12: 523, 567 (Oct.) 1921.

Paget's disease is not often recognized as a cause of pathologic fracture but among our cases we found twenty in which the fracture seemed unquestionably pathologic. That weakening of the bone by the disease may reach the point at which a pathologic fracture may occur is obvious, that such fractures do not occur more often may be unusual.



Fig. 3—Pathologic fracture in a case of osteogenic sarcoma.

Bone cysts, just as osteitis fibrosa cystica and giant cell tumors, cause so much thinning of the cortex of the bone that fractures may easily ensue. Usually the fracture occurs with little or no strain or force, just a slight twist or throw of the extremity will produce the fracture. When the cysts are large, the best results usually are obtained by operation and bone graft. Some smaller cysts undoubtedly will heal with diminution of the size of the cyst after a pathologic fracture. With the larger ones, however, collapse of the bone usually is not a sufficient stimulus to formation of bone to promote complete healing of the cyst.

Tabes dorsalis long has been recognized as a cause of pathologic fracture. Just what the underlying pathologic condition is in these cases never has been determined. We recognize the fact that diminished sensation is commonly found but this alone does not seem to be sufficient. Whatever there is in the character of this bone which leads to Charcot joints probably leads also to pathologic fracture, for there is much similarity between the two processes.

The majority of chondromas which lead to pathologic fractures are those of the phalanges and metacarpal or metatarsal bones. Such chondromas are often diagnosed as cysts, but in several cases of this group the lesion was excised and was replaced by bone grafts. In nearly all instances the diagnosis proved to be chondroma. Thus it may be said that any pathologic fracture which occurs through an apparently cystic lesion in a phalanx or metacarpal or metatarsal bone may well be considered a chondroma until it is proved

otherwise. Pathologic fractures of the larger bones in the presence of the common type of osteochondroma are exceedingly rare. They may occur, however, in association with the so-called enchondroma wherein the tumor is largely within the cortical bone.

Osteoporosis of disuse is well recognized as an occasional cause of pathologic fractures. The number of cases in table 3 seems small, and it is likely that we have failed to gather all cases. Such fractures may occur whenever long disuse of a limb has produced a sufficient amount of disuse atrophy. The fractures are often subperiosteal or of the greenstick type and thus they may not be recognized.

Hyperparathyroidism, or osteitis fibrosa of the von Recklinghausen type, has come to be recognized as a clinical entity and may produce pathologic fractures in the more advanced cases. Often the loss of calcium is so great that clear roentgenograms are nearly impossible to obtain.

Osteomalacia when the term is strictly limited to lesions of pregnant or lactating women, represents a small group in our experience. Recognition of the disease in these instances probably is not difficult. To us it seems that there may be some relationship between this condition and senile osteoporosis. In osteomalacia one usually sees a marked deformity of the pelvic bones. The Looser zones which are seen in this condition are probably not pathologic fractures but defects in ossification, or regions in which there is absorption of the osseous substance of the bone. The zones usually are symmetrical.

Hemangiomas, in our cases, were all of the vertebrae. Such a lesion of the vertebrae has been fairly



Fig. 4—Pathologic fracture in a case of multiple myeloma.

accurately described and usually it is recognized by roentgenologists as a fairly typical lesion. In none of these cases has biopsy been done to prove the identity of the lesion but they were all rather typical. Pathologic fractures may occur when the lesions are far advanced, usually the fracture is of the compression type and does not cause much injury.

Remaining to be mentioned are one case each of neurofibroma, post-irradiation osteitis, pituitary basophilism, purpura haemorrhagica, transverse myelitis, neurocytoma and tuberculosis. The last case was mentioned early in this paper. Fracture following irradiation for a malignant condition of the pelvis is deserving of comment. There may be more of these cases among



Fig 5—Pathologic fracture in a case of endothelioma (Ewing type)

our cases in which there is a malignant condition of the pelvis than we have encountered in this study. The whole subject has been well presented in a paper by Dalby, Jacob and Miller.⁴ Their description of the underlying pathologic condition leaves a little doubt as to the actual nature of the lesion but the etiologic factor seems to be well founded. The compression fracture of a vertebra which occurred in a case of pituitary basophilism may have been purely on a basis of osteoporosis. The case in which the fracture was attributable to purpura haemorrhagica was most unusual. A huge tumor of the thigh developed after an injury, with fracture and subsequent marked absorption of bone. Exploration of the tumor by hollow needle disclosed the presence only of blood clot. The presence of a general blood dyscrasia was recognized and a diagnosis of purpura haemorrhagica was made. Splenectomy was advised but the patient refused operation and subsequently there has been little change. We believe the condition of the bone to be the result of an unusual type of pressure erosion, however, probably incidental to the blood dyscrasia.

We have tabulated and briefly reviewed the cases of pathologic fracture seen at the Mayo Clinic over a period of thirteen years. The relative importance of various diseases as causes of pathologic fractures is obvious in the tables. As an aid to diagnosis of a case, when a pathologic fracture is the presenting lesion, these tables may be of some help.

ABSTRACT OF DISCUSSION

DR JOSEPH A. FREIBERG, Cincinnati. In this comprehensive discussion of pathologic fractures Dr Ghormley and his associates have brought to our attention a subject which is often considered unworthy of serious study. It is my impression that when a pathologic fracture is found, too frequently it is decided by the physician in charge that the patient's days are numbered and he is made comfortable by splints and medication and not adequately studied. In this group of orthopedic surgeons it is realized that the presence of a pathologic fracture should stimulate one to thorough study of the case because in many of these cases we can be of great assistance. The authors have

shown that the patient may have from one to many years of comfort and often physical activity. The group of cases of senile osteoporosis has interested me because I have seen a great number of them and because they are not recognized as frequently as they should be by the general practitioner. The picture of an older person gradually losing height and developing a severe dorsal kyphosis is accepted as undergoing changes of old age. The fact that the patient may have severe localized pain in the back is not considered or studied sufficiently.

DR PHILIP LEWIN, Chicago. I was impressed with the large number of cases presented, 660 cases in thirteen years. The authors have covered every angle of the subject. I was impressed with the large percentage of primary tumors outside the usual ones, such as tumors of the breast, uterus, thyroid, prostate and adrenal, that is the large number that occurred in the gastro-intestinal tract or the liver, pancreas, stomach or intestine. I am sorry the authors did not get a chance to talk about their cases of Paget's disease. I remember one woman with Paget's disease who did not know she had the disease, until she had a pathologic fracture. At open operation I applied hard rubber strips as splints and maintained their position by Putti bands. She obtained perfect consolidation. These fractures have been called greenstick fractures which they are not, as can be seen from the pictures. Codman's term rotten wood fracture is certainly better than the other. I was interested in the cases of osteogenesis imperfecta having a patient who is about 50 years of age, which is quite an advanced age for these patients. Her height is 37 inches (94 cm). She has had 112 fractures but is now teaching in a school for crippled children. I was glad that the authors presented some cases of senile osteoporosis and that Dr Freiberg discussed them. I have had a number of cases in an interesting group in which there was pain in the lower part of the back, the middle of the back and high in the back, but especially in the middle and lower part of the back where a combination of proper bracing following bed treatment and large doses of calcium intravenously

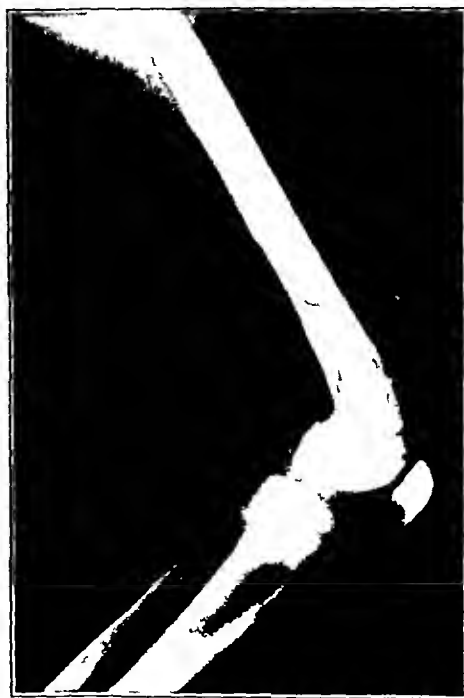


Fig 6—Pathologic fracture in a case of osteomyelitis

combined with either roentgen or radium irradiation, was followed by complete relief.

DR RALPH K. GHORMLEY, Rochester, Minn. The subject, as Dr Freiberg said is one that is oftentimes more or less forgotten but so many of these cases come to us with a fracture as the primary lesion that a little more ability in recognizing the type of pathologic fracture might be of help in proper diagnosis and the institution of proper treatment.

⁴ Dalby, R. C., Jacob, H. W. and Miller, N. L. Fracture of Femoral Neck Following Irradiation. *Am J Obst & Gynec* 32: 5059 (July) 1936.

LESIONS OF THE BRAIN FOLLOWING FEVER THERAPY

ETIOLOGY AND PATHOGENESIS

F. W. HARTMAN, M.D.

DETROIT

In 1935 the literature related to the pathologic changes incident to exposure to heat was reviewed and the lesions produced by accurately controlled fever therapy in two human beings and twenty experimental animals were reported.¹ Briefly the pathologic changes noted may be summarized as follows. Gross changes consisted of engorgement and congestion of blood vessels, degeneration and hemorrhage of the adrenals, hemorrhages in the brain, marked edema and congestion of the lungs, contraction and bloodlessness of the intestine and parenchymatous degeneration of the liver and kidneys. Microscopically, acute passive congestion of all the organs and tissues and cellular degeneration and hemorrhages of varying degree in the adrenals, liver, brain, lungs and kidneys were visible.

At the time of the previous report no attempt was made to determine the etiology and the pathogenesis of the lesions described; it was assumed that they were due to the heat applied, and it was pointed out that the use of certain groups of analgesic drugs seemed to be a contributing factor.

When I reviewed the monograph of Courville, "Asphyxia as a Consequence of Nitrous Oxide Anesthesia," the striking parallelism between the lesions of the brain which he ascribed to asphyxia and those observed after fever therapy suggested that asphyxia or anoxia was at least one of the factors in the causation and development of the pathologic changes associated with exposure to heat. This suggestion immediately raised the following questions:

✓ 1. Is this apparent parallelism confirmed or disproved by histologic examination of the brain and other organs?

2. Are the physical and the biochemical disturbances associated with fever therapy conducive to anoxia?

3. Does anoxia occur during fever therapy and if so to what degree?

This study was undertaken in an effort to answer these questions.

MATERIAL

In addition to a review of the two cases (cases 1 and 2) and the experiments on twenty animals previously reported, one more case and experiments on fifteen animals are included in this study.

CASE 3—History.—W. L., a white man aged 31, first seen on July 23, 1934, had been having periodic attacks of iritis for the past two years. One year previous to the onset of iritis he was confined to bed for several weeks with streptococcal sore throat. The general physical examination showed nothing significant except marked sensitivity to *Streptococcus viridans* (stock vaccine) and to nonhemolytic streptococcus obtained from stool culture. The tuberculin test was negative until 0.1 mg. of old tuberculin was used. (At another clinic the patient later gave a marked reaction to 0.001 mg. of old tuberculin.) Serologic examination gave negative results. Examination of the eyes revealed marked bilateral iridocyclitis.

From the Department of Pathology, Henry Ford Hospital.
Read before the Section on Pathology and Physiology at the Eighty-Eighth Annual Session of the American Medical Association, Atlantic City, N. J., June 11, 1937.

1. Hartman, F. W., and Major, R. C. Pathological Changes Resulting from Accurately Controlled Artificial Fever. *Am. J. Clin. Path.* 5: 392 (Sept.) 1935.

2. Courville, Cyril R. Asphyxia as a Consequence of Nitrous Oxide Anesthesia. *Medicine* 15: 129 (May) 1936.

caused, it was thought, by a systemic bacterial infection. That it was a tuberculous process was also considered possible.

Treatment consisted of injection of autogenous vaccine and tuberculin, plus local medication to the eyes. The response was indifferent.

Beginning July 8, 1935, the patient was given a series of six fever treatments at intervals of from four to seven days for five hours each, with the temperature varying from 103.2 to 107.4 F. Sodium amytal and pantopon (the hydrochlorides of the alkaloids of opium, principally morphine) were the sedatives used in five treatments and paraldehyde in the sixth. After these treatments the condition of the eyes improved temporarily. The patient was given a rest period until March 3, 1936, when he was given another series of fever treatments. The intervals between treatments were from five to seven days, except that between the last two treatments which was thirteen days. The first five treatments each lasted five hours and the temperature ranged from 104.8 to 107.6 F. The sixth treatment lasted six hours, and the temperature ranged from 105 to

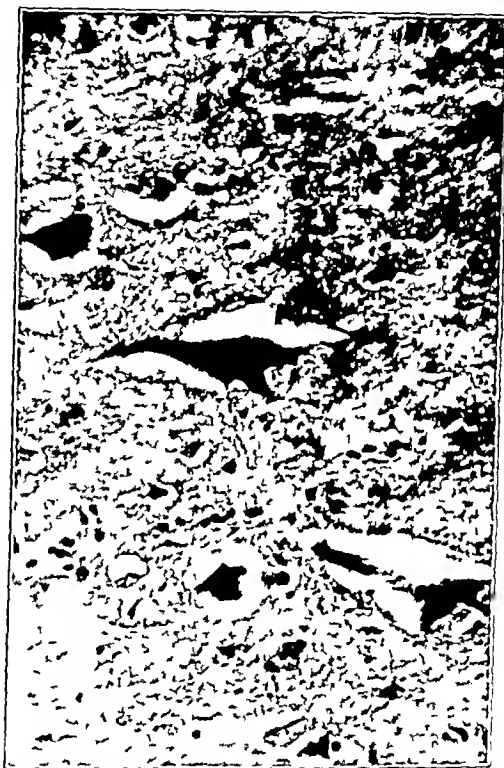


Fig. 1 (case 3).—Section from the cortex under medium power showing unusually wide perivascular spaces and distorted, shrunken and pyknotic pyramidal cells.

107.2 F. Sedormid (allyl-isopropyl-acetyl- γ -tributamide) and pantopon were the basic sedatives except during the last treatment in which 5 grams (0.3 Gm.) of pantopon and 1½ grams (0.1 Gm.) of pentobarbital sodium were given.

The patient tolerated the first thirteen treatments quite well although he had some nausea and vomiting. The blood pressure was 114/60 at the beginning of the last treatment and 68/20 at the conclusion. At 9 p. m. he was comfortable, the blood pressure was 90/68. At 6:30 a. m. the following morning, he became apneic and was given artificial respiration and supportive treatment with some improvement. At this time the left pupil was dilated, respiration was stertorous and all deep reflexes were absent. At 10 a. m. his condition was unchanged. The blood pressure was 142/85, the color good, the right side of the face weak, the limbs flaccid and the deep reflexes active and equal. The carbon dioxide combining power was 35.3 per cent. The patient died at 1:45 p. m. twenty hours after his last treatment. The clinical diagnosis was cerebral hemorrhage.

Necropsy—The body was well nourished and well developed. The skin was livid and congested. The lips and fingernails showed marked cyanosis. The peritoneum was smooth and the abdominal organs of the usual size. The pleural cavities were free from fluid and adhesions. The thymus gland had two lobes measuring 8 by 5 by 1 cm. The pericardial sac contained 25 cc of clear fluid.

The heart weighed 300 Gm. Numerous small petechial hemorrhages were seen throughout the epicardium. The valves were intact throughout. The coronary vessels were patent. The left lung weighed 350 Gm and the right 400 Gm. The pleural surfaces were smooth. The parenchyma in the upper and the middle lobe of the right lung were air containing. The lower lobes were increased in density, dark reddish brown and atelectatic. On section through the lower lobes much bloody fluid was expressed on pressure, but no air.

The spleen weighed 185 Gm. The pulp was soft and the lymphoid tissue abundant. The liver weighed 1580 Gm. The capsule was smooth and the parenchyma reddish brown. The usual architecture was well preserved. The gallbladder emptied readily. The walls were of the usual thickness and the mucosa intact. The pancreas was of the usual size, firm, distinctly lobulated and grayish pink. The adrenals were of the usual size and shape. On section the cortical tissue was seen to be light grayish yellow, white and the medulla well preserved and dark brownish yellow. The left kidney weighed 125 and the right 120 Gm. The cortical surface was smooth, the cortex measuring from 5 to 7 mm, and the usual architecture well made out. The urinary bladder contained 500 cc of clear urine. The prostate was of the usual size. The stomach was markedly dilated with fluid and gas. The mucosa was intact. The remainder of the gastrointestinal tract was not remarkable.

The calvarium was of the usual thickness. The pia and the arachnoid were delicate and glistening. The convolutions were broad and flat while the sulci were narrowed. The right lobe of the cerebellum was a soft hemorrhagic necrotic mass. There was marked molding of the cerebellar peduncles. Minute examination of the vessels in the circle of Willis showed no abnormalities and no evidence of thrombi or emboli. Bacteriologic examination showed no growth.

Microscopic Examination—The thymic parenchyma was well preserved with the usual small lymphoid type of cell and Hassel's corpuscles in abundance. There was little fatty tissue. Sections from the myocardium showed muscle fibers of average size and shape and no evidence of degeneration. In sections from the lower lobes of the lungs alveoli were filled with fluid and blood. The bronchioles in the same areas showed polymorphonuclear leukocytes. The architecture of the spleen was usual but there was an unusual amount of yellowish brown blood pigment. The mucosa of the intestine was intact and without evidence of hemorrhage. The pancreas contained the usual number of islands of Langerhans which were well preserved. The cytoplasm of the liver cells was granular and the nuclei were pyknotic. The sinusoids were engorged. The adrenals showed marked hyperemia but no hemorrhage or necrosis. The tubular epithelium of the kidneys contained much granular degeneration and pink-staining amorphous material. The glomerular tufts were hyperemic but no hemorrhage was seen.

Sections from the cerebrum showed marked edema with unusually large clear spaces about the smaller vessels and about many of the pyramidal cells. The pyramidal cells themselves in many instances took the stain poorly. The nuclei were broken up and the Nissl bodies could not be made out. Sections from the cerebellum in the better preserved left lobe showed marked congestion and some diffuse hemorrhage. The Purkinje cells were poorly staining and the nuclei pyknotic. In the right necrotic lobe the tissue took a homogeneous pink stain although nuclei here and there stained poorly. There was extensive hemorrhagic infiltration. No evidence of thrombosed or occluded blood vessels could be made out.

Anatomic Diagnosis—The diagnosis was acute iritis with loss of vision, necrosis of the right lobe of the cerebellum with hemorrhage, edema and congestion throughout the cerebrum and

cerebellum, degeneration of cell groups throughout the cerebrum and cerebellum, especially of the pyramidal and Purkinje cells, atelectasis and hemorrhage (hemorrhagic pneumonia) of the lower lobes of both lungs, old calcified tuberculosis of the left lung, dilatation of the stomach, parenchymatous degeneration of the liver and kidneys.

ANIMAL EXPERIMENTS

The technic of the animal experiments was similar to that previously reported. The temperatures induced ranged from 104 to 108 F and the duration from four to fourteen hours. When the animals were removed from the Kettering hyperthermia, arterial and venous blood was obtained immediately under oil, by incision and puncture of the femoral vessels, for examination of the oxygen saturation. When the animals died or were killed autopsy was done at once and tissues for microscopic examination were placed in 10 per cent solution of formaldehyde.



Fig. 2.—Section under medium power from the base of the brain of the animal described in the representative protocol showing widely dilated perivascular spaces and poorly staining shrunken Langhans cells and necrosis.

REPRESENTATIVE PROTOCOL

A bitch weighing 16 Kg with a rectal temperature of 102.4 F was given 12 grams (0.8 Gm) of sodium amytal intraperitoneally and placed in the hyperthermia at 9:15 a.m. The temperature of the cabinet was 165 F and the humidity 45 per cent. After an hour and twenty-five minutes of treatment the rectal temperature had risen to 104.6 F. At this time 3 cc of paraldehyde was given by stomach tube. The rectal temperature was 107.2 F at 1:30 p.m. averaging 105 F throughout the five and a quarter hours of treatment. Physiologic solution of sodium chloride was given freely by mouth throughout the treatment. On removal the animal was in good condition with rapid respirations and a strong bounding pulse. The wrappings were left in place. With procaine hydrochloride anesthesia the femoral vessels were exposed and blood was removed under oil from both artery and vein. Examination of the arterial blood showed an oxygen content of 15.59 volumes per cent in oxygen capacity of

26.65 volumes per cent and an oxygen saturation of 59 per cent. Examination of the venous blood showed an oxygen content of 11 volumes per cent and an oxygen saturation of 41 per cent. The wrappings were left in place until 11 p. m., but the temperature remained elevated and was 106 F (rectal) when the animal died at 9 a. m. the following morning.

The autopsy, begun at 9:20 a. m., showed marked edema and hemorrhagic consolidation of the lungs, marked engorgement of

lightly staining and pointed. In the human beings and in the animals surviving for a longer period, the same type of cells (cresyl violet stain), especially the cytoplasm, stained lighter, and the chromidial substance was pushed to the periphery, clumped and lightly staining. The nucleus was small and pyknotic. This group showed also many small rounded spaces throughout the base of the brain, indicating the degeneration and loss of individual cells.

The necrosis of whole groups of cells and their glial tissue, referred to as "devastation areas" by Gildea and Cobb,³ was a characteristic lesion in the human brains involving the base in two and one lobe of the cerebellum in the third (figs. 3 and 4). Further, the animals that survived twenty-four hours or longer showed similar but less extensive lesions. This massive necrosis was accompanied by hemorrhage in all instances, being most striking in the human brains.

The minute cellular changes and the areas of necrosis observed in these brains after fever therapy are the histologic changes observed after cerebral anoxia produced by ligation of blood vessels, carbon monoxide poisoning and asphyxia.

Are there physical and biochemical disturbances associated with fever therapy conducive to anoxia? As pointed out by Barcroft,⁵ anoxia is produced by alterations in both the supply and the utilization of oxygen, and it is only with these alterations in mind that one

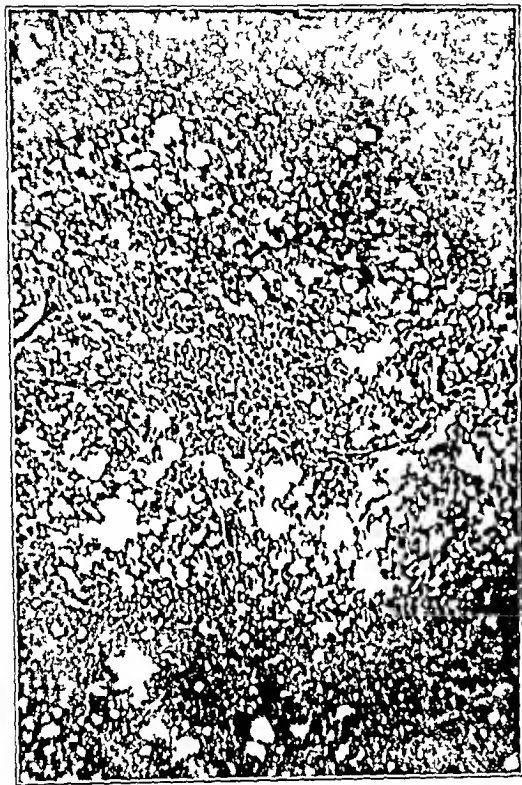


Fig. 3 (case 1)—Section from the base of the brain under low power showing a large area of devastation necrosis.

all tissues and outspoken hemorrhage throughout the brain. All the histologic changes detailed hereafter were exaggerated as compared with those in the other animals studied.

COMMENT

Is the apparent parallelism between the pathologic changes due to fever therapy and those due to anoxia confirmed or disproved by histologic examination of the brain and other organs? The perivascular spaces and the perineural spaces of the brain in all three cases of fever therapy and in the brains of all the animals which survived the fever therapy were unusually wide when compared with those of controls (fig. 2). This condition was reported by Courville,² Gildea and Cobb,³ Landis,⁴ and others, as resulting from anoxia produced in various ways both clinically and experimentally. All investigators agree that cerebral edema is a constant effect of anoxia in the brain. Landis,⁴ by demonstrating that fluid passes through capillary walls at four times the normal rate after only three minutes' lack of oxygen furnished the probable explanation.

In animals surviving for only a few hours after the completion of fever therapy, the most characteristic change seen in the pyramidal ganglion and Purkinje cells was distortion, shrinkage and homogeneous dark staining. In addition, the processes were shrunken



Fig. 4 (case 3)—Section from the cerebellum under low power showing necrosis, extensive hemorrhage and shrunken pyknotic Purkinje cells.

can deal with the problem to the best advantage. Hence the following definitions (Peters and Van Slyke⁶):

I. Anoxic anoxia. If there is a deficit in the arterial oxygen tension at which the blood delivers oxygen to the cells, the cells are compelled to work at a lower pressure.

³ Gildea, Edwin F. and Cobb, Stanley. The Effects of Anemia on the Cerebral Cortex of the Cat. *Arch. Neurol. & Psychiat.* 23: 876 (May) 1930.

⁴ Landis, E. M. Micro-Injection Studies of Capillary Permeability. III. The Effect of Lack of Oxygen on the Permeability of the Capillary Wall to Fluid and to the Plasma Proteins. *Am. J. Physiol.* 83: 528 (Jan.) 1928.

⁵ Barcroft, Joseph. Anoxemia. *Lancet* 2: 485 (Sept. 4) 1930.

⁶ Peters, John P. and Van Slyke, Donald D. *Quantitative Chemistry*. Baltimore: Williams & Wilkins Company, 1931. Vol. 1, p. 44.

2 Anemic anoxia The same result follows if, because of lack or inactivation of hemoglobin the volume percentage of oxygen that can be carried by the arterial blood is low, in this case removal of the usual volume percentage of oxygen from the blood by the cells is accomplished by an abnormally great fall in tension

3 Stagnant anoxia Even when the arterial blood has an entirely normal oxygen content and pressure anoxia in the cells occurs if the circulation is so retarded

TABLE 1—Animals Receiving Fever Therapy

Date, 1937	Number	Duration of Treatment Hours	Temperature F		Arterial Blood			Venous Blood Oxygen Content Volumes per Cent	Comment
			Beginning	End	Oxygen Content Volumes per Cent	Oxygen Capacity Volumes per Cent	Oxygen Saturation Percentage		
5/11	3	4 1/2	102.2	108.0	10.54	17.9	60.0		Died 5 p m
5/13	4	100.4	108.0	12.3	20.14	61.0			Died 3 p m
5/13	4	101.2	107.4	12.18	14.86	82.0			
5/13	4	100.6	108.0	10.31	17.14	60.0			Died same day
5/15	4	102.2	107.0	20.90	25.14	83.5			
5/15	4	102.0	107.0	16.6	22.9	72.1			
5/17	4	102.0	106.2	18.70	21.06	86.0	14.80		
5/17	6	101.4	106.0	13.07	18.67	70.0	9.83		
5/18	9	102.0	106.0	14.42	23.0	63.0	11.37		Blood sugar 85 mg died during night
5/18	10	4	101.0	106.8	19.12	24.44	78.0	10.53	Blood sugar 66 mg
5/22	9	6	101.8	107.6	12.65	19.10	66.5		
5/22	10	6	100.0	106.0	10.87	20.80	77.0	1.07	
5/20	12	5	101.0	101.0	1.81	21.39	72.0	11.11	
5/20	11	5	102.4	106.6	10.9	26.6	59.0	11.00	Died following morning

that the oxygen is not transported rapidly enough to maintain its optimum tension in the active tissues

4 Histotoxic anoxia With the supply of oxygen perfectly normal in all respects, anoxia may nevertheless occur if the tissue cells are poisoned in such a manner that they cannot use the oxygen properly

Early biochemical studies⁷ showed that alkalosis occurs soon after pyretotherapy is begun, the p_{H} of the blood averaging 7.6 and the carbon dioxide combining power being reduced to 40 volumes per cent. This results from the rapid breathing and blowing off of carbon dioxide. If at the same period the respirations are shallow, little fresh air gets into the alveoli of the lungs because of the dead space in nose, trachea and bronchi, and the result is decreased oxygen saturation of the arterial blood. The alkalosis is important, since the slightly alkaline hemoglobin compound gives up its oxygen less readily to the tissues than normal hemoglobin.

Another contributing factor is the increased temperature of the blood, which Barcroft⁸ has shown decreases the oxygen saturation. The same increase in temperature increases the basal metabolic rate (Simpson⁹) 55 per cent for each degree giving a rate of +40 per cent with a temperature of 106° F. Increased metabolism means a corresponding demand for oxygen in the tissues.

Merkins and Davies¹⁰ found the rate of local blood flow through the capillaries so rapid when the arm is placed in hot water that there is little difference in

oxygen saturation between the arterial and the venous blood. Kissin and Bierman,¹⁰ Tenney¹¹ and Bazett¹² found that the velocity of blood flow increases during fever therapy. Figures from this series of nineteen experiments show that there is less difference in oxygen saturation between blood from the femoral artery and blood from the femoral vein after fever therapy than in the normal subject. The oxygen unsaturation of the tissue gradually mounts as long as the propelling force responds. If this force is indicated by rapid weak pulse and falling blood pressure, the accelerated velocity of the blood may be replaced by comparative stagnation in the dilated vessels resulting also in oxygen unsaturation because the transportation is too slow to maintain the optimum oxygen tension in the tissues.

As noted in earlier communications,¹³ the type of sedative used seems to have a bearing on the percentage of cyanosis, vascular and respiratory collapse and mortality. Keilin¹⁴ has shown experimentally that cyanide, alcohol, acetone and ethyl urethane stabilize the oxy-cytochrome of the tissues so that oxygen is not readily removed. More recently the English workers Jowett and Quastel of Cambridge University¹⁵ have shown that phenobarbital, chlorbutanol and evipan (evipal soluble) decrease or abolish oxygen utilization by the brain. The administration of oxygen during fever therapy in the series here reported tended to reduce the sedative effect of sodium amytal. Enough separate factors tending to produce anoxia during fever therapy to justify an affirmative answer to the second question have been presented.

Does anoxia occur during fever therapy and if so to what degree? The answer to this third question is found in tables 1 and 2.

TABLE 2—Normal Animals

Date, 1937	Number	Duration of Treatment Hours	Temperature F		Arterial Blood			Venous Blood Oxygen Content Volumes per Cent	Comment
			Beginning	End	Oxygen Content Volumes per Cent	Oxygen Capacity Volumes per Cent	Oxygen Saturation Percentage		
5/19	1				21.03	24.40	87.0	18.40	
5/20	2				20.67	24.14	86.0	14.80	
5/21	3				20.32	23.86	86.5	17.50	
5/21	4				21.71	25.00	86.6	15.84	
Animal receiving 10 grains of sodium amytal									
5/27					22.10	24.19	89.0	17.62	
Animals receiving oxygen throughout fever therapy									
6/1	10	6	102.2	107.2	20.55	23.18	88.5		Oxygen (6 liters per minute) administered throughout treatment
6/3	13	0	101.0	106.0	19.18	24.67	78.0		
6/3	14	6	101.2	106.4	19.60	23.12	85.0		

In table 1 it is to be noted that only one animal maintained a normal saturation of the arterial blood and that it had relatively low temperatures throughout treatment. Five animals had the oxygen saturation of

7. Bishoff, Fritz, Long, M. Louisa and Hill, Elsie. Studies in Hyperthermia. 11. The Acid-Base Equilibrium in Hyperthermia Induced by Short Radio Waves. *J. Biol. Chem.* 90: 321 (Jan.) 1931.

8. Simpson, Walter. Studies on the Physiology of Fever. *J. A. M. A.* 106: 246 (Jan.) 18, 1936.

9. Weiskopf, J. and Davies, H. W. Observations on the Gases in Human Arterial and Venous Blood. *J. Path. & Bact.* 23: 451 (Dec.) 1920.

10. Kissin, Milton and Bierman, William. Influence of Hyperpyrexia on Velocity of Blood Flow. *Proc. Soc. Exper. Biol. & Med.* 30: 527 (Jan.) 1933.

11. Tenney, C. F. Artificial Fever Produced by the Short Wave Radio and Its Therapeutic Application. *Ann. Int. Med.* 6: 457-568 (Oct.) 1932.

12. Bazett, H. C. Circulation in Pyrexia. *J. A. M. A.* 97: 1271-1274 (Oct. 31) 1931.

13. Dowdy, A. H. and Hartman, F. W. Preparation of Patients for Fever Therapy with Special Reference to Sedation and Fluid Intake to be published.

14. Keilin, D. On Cytochromes, A Respiratory Pigment Common in Animals, Yeast and Higher Plants. *Proc. Roy. Soc.* 1925.

15. Jowett, Maurice and Quastel, Juda H. The Effects of Narcotics on Tissue Oxidations. *Biochem. J.* 31: 565 (April) 1937.

the arterial blood decreased to below 65 volumes per cent, and all died shortly after the completion of therapy.

Table 2 shows the oxygen saturation of the arterial blood in normal animals, the effect of sodium amytal and the effect of the administration of oxygen during fever therapy. Sodium amytal in common with other sedatives apparently affects the cells directly, decreasing their utilization of oxygen, and has a selective action on the brain, since the oxygen saturation of the femoral artery is normal. The oxygen saturation of the arterial blood may be kept at normal levels by the continuous administration of oxygen during fever therapy.

SUMMARY AND CONCLUSIONS

1 Constant and severe anoxia is shown by the decreased oxygen saturation of the arterial blood and the low oxygen content of the venous blood in animals after fever therapy. Animals having a saturation below 65 volumes per cent died.

2 Factors producing anoxia during fever therapy are alkalosis, accelerated blood flow, increased temperature of the blood and increased demand for oxygen in the tissues. The last results from the increased metabolism and the depressed utilization of oxygen of the tissues, especially the brain, due to the histotoxic effect of the sedatives used.

3 The pathologic changes resulting from fever therapy are typical of anoxia produced in other ways, such as prolonged asphyxia, carbon monoxide poisoning and acute alcoholism.

4 Anoxia may be prevented by the administration of oxygen throughout fever therapy, provided respiration and blood pressure are maintained at reasonable levels.

5 The best method of administering oxygen during fever therapy is the nasal catheter, it allows the patient to ingest fluids, an electric fan to be used, ice to be applied to the face and the patient to be moved. Combinations of oxygen and carbon dioxide may be used to counteract the alkalosis and apnea.

ABSTRACT OF DISCUSSION

DR. WALTER M. SIMPSON, Dayton, Ohio: During the past six years my associates and I have subjected some 800 patients to about 25,000 hours of artificial fever therapy. With the exception of one patient with fulminating meningovascular syphilis and rapidly progressive blindness who was treated with full knowledge of the grave risk involved and who died thirty-six hours after a single short treatment, no deaths have occurred that could be attributed to the artificial fever treatment. All of our patients have been subjected to a thorough diagnostic survey by the physicians in the Department of Fever Therapy Research to determine their eligibility for fever therapy. Special studies are made of the cardiac, vascular and renal functions, including electrocardiographic studies, basal blood pressure determinations, renal function tests and blood chemical analyses. It is our practice to determine the individual patient's tolerance for artificial fever therapy by giving a short trial treatment before undertaking a course of treatments requiring high temperature levels over a long period. This report again emphasizes the fact that artificial fever therapy by physical means is not a simple undertaking. In the hands of unskilled or unscrupulous persons it is fraught with danger. Even in the hands of skilled workers as in the present instance, occasional accidents have occurred. There is urgent need for fundamental studies of the type described by Dr. Hartman in order that the margin of safety may be widened. We have described our observations which indicated that fever produces varying degrees of alkalosis largely because of the loss of the important acid ions of the blood and tissues, carbonic acid and chlorides. Chloride balance can be maintained by adequate chloride intake before, during and after

the fever treatment. Dr. Hartman's studies point to a simple and practical method to combat the loss of carbonic acid and the decreased oxygen saturation. It seems apparent that artificial fever therapy by physical means should be restricted to institutions in which the physician and nurse personnel has received adequate preliminary training. Moreover, the likelihood of success in this work is greatly enhanced if it is done by physicians and nurses who devote full time to it. To give only occasional treatments in a haphazard manner is to invite disaster. The production of effectual artificial fever is not adaptable to ordinary office practice. Unless these precautions are exercised this important adventure in therapeutics is almost certainly doomed to a period of discredit not unlike that which followed the introduction of roentgen rays. In the hands of skilled and devoted workers this form of therapy seems destined to occupy an increasingly important place in the therapeutics of several diseases which have not yielded to other forms of treatment.

DR. J. M. NIELSEN, Los Angeles: I have had the privilege of examining all the patients that Dr. Courville studied and seeing the pathologic specimens. There are certain marked differences between the pathologic condition demonstrated by Dr. Courville as anoxia and the pathologic condition demonstrated by Dr. Hartman. Clinical conditions due to nitrous oxide anoxia were anoxia, the patients did not have this pathologic condition unless they lived for a considerable time. It took a number of days for it to develop. Whereas if I understand the presentation correctly, the patients died shortly afterward and had acute changes—these changes were present immediately. Also in the pathologic specimens of Dr. Courville the lesions were gross. One could look through a slide with the naked eye and see the areas of necrosis, whereas in those demonstrated here a microscopic examination was necessary. I should like to ask Dr. Hartman how long the fever was maintained in the human cases. I notice that it was maintained over many hours in the dogs. I have had experience with artificial fever therapy in dementia paralytica and in tabes and I have been bothered by one's inability to carry out many of the accurate physiologic preventive measures because one is dealing with mental patients who cannot cooperate. One has to tie them down hand and foot and make them stay there. One can give them saline solution to start, but one can't give them whatever one likes during the treatment. One patient had a rectal temperature of 108.7. I intended to stop the fever at 107 but it wouldn't stop. The patient survived and got more benefit out of that treatment than any other that was given him. Two other patients had a temperature of 108 for the same reason; it wouldn't stop. It has been necessary to put the patients in ice packs to bring the temperature down and nurse them along for twenty-four hours yet they made good therapeutic recoveries. So there are definite differences here and if the author can add more information I shall be glad to have it.

DR. VIRGIL H. MOON, Philadelphia: There is no question that heat above a certain level will cause disturbances of circulation which originate primarily in the capillaries. These are the most delicate structures in the human body. They are the most susceptible to injurious agents or to adverse conditions of various kinds. Even so mild an agent as temporary anoxia of a local area was shown by Landis to increase the capillary permeability in that area seven times. The same results followed when mild injurious agents of a chemical nature were introduced. Heat is another of the agents that will cause capillaries to lose their tonus and to relax in such a fashion as to upset the circulatory efficiency. The changes which Dr. Hartman has described are identical with the changes which I have seen in animals and in human beings in shock induced experimentally or occurring clinically. There were the same edematous congested conditions of the viscera and the same type of hemorrhages and degeneration both in the brain and in the parenchymatous organs. I am sure that he has observed a circulatory effect produced by hyperthermia which is identical in its character to the circulatory changes which I have observed when shock was induced by experimental means. And again I believe that probably oxygen therapy is one of the important agents that may be used to counteract this type of circulatory disturbance if it can be applied before the vicious cycle has progressed to the point at which the changes are irreversible.

DR CLADE BROOKS, New Orleans What is the purpose of using amylal or other barbituric acid compounds, and what amount of toxicity and mortality is due to the use of these compounds?

DR FRANK W HARTMAN, Detroit In answer to Dr Nielsen's discussion, some of the data have been misinterpreted probably because of the hurried presentation None of the pathologic lesions presented occurred in animals surviving the fever application less than twenty-four hours Most of the experimental animals lived from forty-eight to ninety-six hours after the fever The patient presented lived eighteen hours after the completion of the fever therapy and this was the last of a series of treatments The work reported is in accord with Courville's in that the longer the patient or animal lives after the anoxia the more pronounced the pathologic changes In our patients the hemorrhages and the necrosis of the cerebellum were obvious in the gross Regarding Dr Moon's remarks I am sure he feels as I do that the underlying etiologic factor in the lesions presented is anoxia With his extensive investigation of shock he recognizes as I do the importance of anoxia in the whole syndrome In answer to Dr Brook's question, the effects of the barbiturate group of sedatives has been emphasized in a previous communication In an article now in press concerning the preparation of patients for fever therapy, Dr Dowdy and I stress the necessity of using the less potent and slower acting sedatives

PRIMARY BRONCHOGENIC CARCINOMA

FROM THE PATHOLOGIC AND RADIOLOGIC
POINTS OF VIEW

WALTER L MATTICK, MD

AND

EUGENE M BURKE BS

BUFFALO

The subject of primary carcinoma of the lungs has attained such widespread interest in the past two decades that it may seem vain repetition to attempt to overcrum an already voluminous literature with further case reports On the other hand, some of the most important therapeutic issues are still unsettled and it is only by evaluating the results of such reports in

TABLE 1—Metastases or Extension of Bronchial Carcinoma

	Percentage
Bones	38
Distant nodi	36
Lungs (other lung or lobes)	36
Regional nodes	34
Liver	20
Pleura	10
Adrenals	8
Kidneys	6
Pancreas	6
Esophagus	6
Brain	4
Pericardium	4
Auricular appendage and pulmonary vein	4
Intestine	2
Thyroid	2
Spleen	2
Diaphragm	2

increased numbers that final decision on these problems will be possible This paper will attempt only to set forth a few of the highlights as observed in the diagnosis and therapy of this lesion

Since the founding of our clinical unit in 1913, approximately 30,000 patients have presented themselves for examination and 18,000 malignant growths have been discovered Seventy-three cases of car-

cinoma of the bronchus were recognized, an incidence of 1 to 250 At postmortem examination this lesion was noted with half the frequency of carcinoma of the stomach and, like the latter, predominated in males, being five times more frequent in men than in women The greatest prevalence was noted between the ages of 40 and 70 years, the lesion being most commonly observed in the fifth decade

Metastases, as determined by combined clinical and postmortem manifestations, were most numerous in the bones, the incidence was 38 per cent Involvement of distant nodes was slightly less frequent, the incidence being 36 per cent About one third or more of our patients have therefore shown distant metastases at or shortly after the time of diagnosis Extension to the adjoining lobes of the lung or to the contralateral lung or regional nodes occurred with approximately

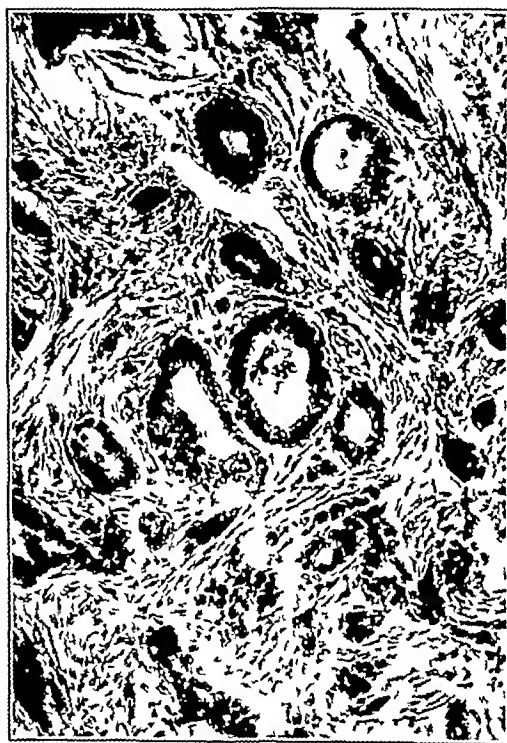


Fig 1—Adenocarcinomatous type Ia (Figures 1 to 7 inclusive show the histopathologic tendencies of bronchus carcinoma according to classification given in table 2 It should be noted that the fields were representative of the predominant cellular architecture of the particular specimen studied In a few instances however the pleomorphism was so marked as to make such classification impossible)

the same frequency as distant metastases Hence pathologically considered the prognostic outlook, especially as judged from this material, is therapeutically far from promising Table 1 contains a more detailed study of the metastases and extensions and is quite similar to that given for other series with the exception of the low incidence of metastasis to the brain, which may be attributable to our inability to hospitalize the patients and to obtain complete autopsies

On the basis of a common cellular origin from the basal cell epithelial deposits beneath the lowermost layer of the bronchial mucosa, as postulated by Fried,¹ an attempt was made to classify the tumors according to predominating cellular architecture Although universal pleomorphism was generally in evidence, it was usually possible to group the tumors on a histopathologic basis,

From the State Institute for the Study of Malignant Disease Burton T Simpson MD Director
Read before the Section on Radiology at the Eighty-Eighth Annual Session of the American Medical Association Atlantic City N J June 10 1937

they ranged from the most differentiated adenocarcinomatous types, on the one hand through those of squamous cell predominance to those with anaplastic tendencies, on the other. Under such a purely artificial scheme, the greatest incidence was found to occur in

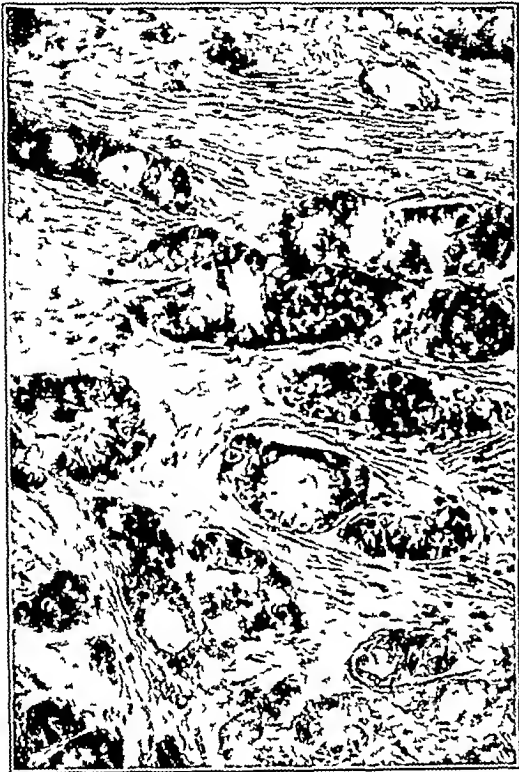


Fig. 2—Adenocarcinomatous type Ib

the squamous cell group where keratinizing tendencies were noted in twenty-two and nonkeratinizing in twelve. The next greatest incidence occurred in the

TABLE 2—Histopathologic Classification of Bronchial Carcinoma According to the Predominating Cellular Tendency *

	Cell differentiation	No. of Cases
Adenocarcinoma	I Adenocarcinoma tendencies	
	a Not mucus producing with columnar cells lining acini	4
	b Mucus producing	2
	c Cuboidal cell lining acini	0
Squamous cell lesions	II Squamous cell tendencies	
	a Keratinizing (pearls)	22
	b Nonkeratinizing	12
Anaplastic	III Basal cell tendencies (transitional)	6
	IV Round cell tendencies (medullary)	14
	V Spindle cell tendencies (oat cell)	2
	Cell undifferentiation	62

* Based on the assumption of the unitary cellular theory of origin from the basal cell deep to beneath the bronchial mucosa as postulated by Fried.¹

less differentiated round cell group, in which fourteen tumors were classified. For more complete details reference should be made to table 2.

The histopathologic data as outlined, were further correlated with age, location of the primary lesion, degree of malignancy, radiosensitivity and survival

period without any apparent differences being indicated as might be expected on the theory of common origin of the tumor cells and the universal tendency to pleomorphism.

Two well defined clinical groupings were noted and should be mentioned. The first, based on anatomic location of the primary lesion and previously suggested by Rabin and Neuhof,² divides these lesions into the peripherally located parenchymatous ones and the four to six times more frequent hilus or central types. Only seven cases in our series of seventy-three could be placed in the peripheral classification. This peripheral group is important from the point of view of operability and should be given utmost attention by the roentgenologist, especially in cases in which there are manifestations of isolation of the tumor mass, effusion or chronic abscess formation, the last Edwards³ has shown to be broken down pulmonary cancer in 10 per cent of the cases.

The second interesting variety of cases are those which, for want of a better term, we have designated as the atypical group, with a metastatic history of onset. Here pulmonary symptoms are not manifested, and often roentgen evidence is obscure until some time after the patient has sought relief for distant metastatic phenomena, such as enlarged inguinal glands in one



Fig. 3—Squamous cell type IIa

case, dysphagia in others or tumor of the brain as reported by Fried. Eleven cases in our series, or 15 per cent, were classified in this atypical group. Thus it appears that only by the development of an

² Rabin, C. B. and Neuhof, Harold. A Topographic Classification of Primary Cancer of the Lung: Its Application to Operative Indications and Treatment. J. Thoracic Surg. 4: 147 (Dec.) 1934.
³ Edwards, A. T. Malignant Disease of the Lung. J. Thoracic Surg. 4: 107 (Dec.) 1934.

alertness to detect bronchial carcinoma and the use of serial roentgenography in all cases in which the history is suggestive can the clinician or radiologist be led to the early recognition of these lesions

Although the roentgen evidence may not be pathognomonic, because of the ease with which it is obtained, it most often leads to a provisional diagnosis

TABLE 3—Predominating Roentgenographic Characteristics

	Manges and Farrell (70 Cases)	State Institute for the Study of Malignant Disease (38 Cases)
Atelectasis	40%	47%
Increased markings	28%	21%
Tumor mass	24%	1%
Abscess or cavitation	6%	1%
Pleural effusion	2%	15%

of pulmonary cancer. Again the classification of Rabin and Neuhof,² with the usual early finding of atelectasis in the hilus group and demonstration of a tumor mass in the rarer peripheral types, will be helpful from both the diagnostic and the prognostic angles

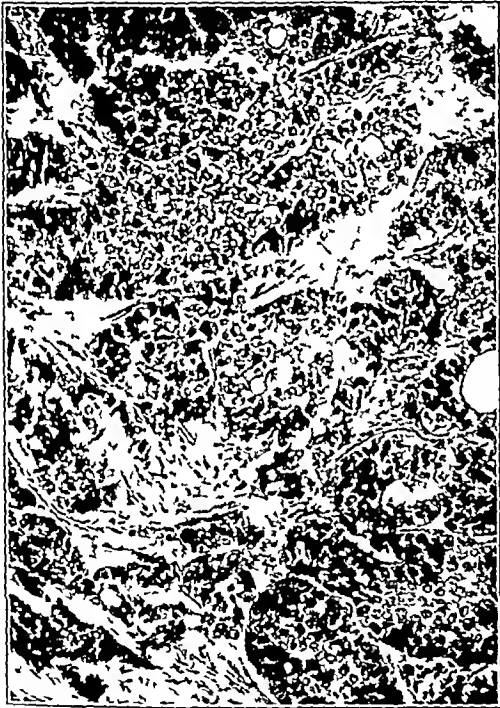


Fig 4—Squamous cell type IIb

In fact, any unilateral pulmonary involvement in a person past middle age should be viewed with suspicion until proved nonmalignant. Frequent recourse to lateral projections, bronchography with iodized oil and pneumothorax will be found helpful in clearing up the diagnosis in some of the more difficult cases.

The predominating roentgen characteristics were noted in the films available and compared with a similar series studied by Farrell.⁴ The minor variations noted in table 3 tend to indicate that our patients were seen later and showed more advanced lesions than those observed by Farrell.

⁴ Farrell, John T. Jr. Diagnosis of Bronchial Carcinoma. A Clinical and Roentgenologic Study of Fifty Cases. Radiology 26: 261 (March) 1936.

Much controversy has arisen over the proper therapeutic management of bronchial carcinoma. The radiologic literature is full of reported regressions and arrests of pulmonary tumor, but unfortunately most



Fig 5—Squamous cell type III (transitional)

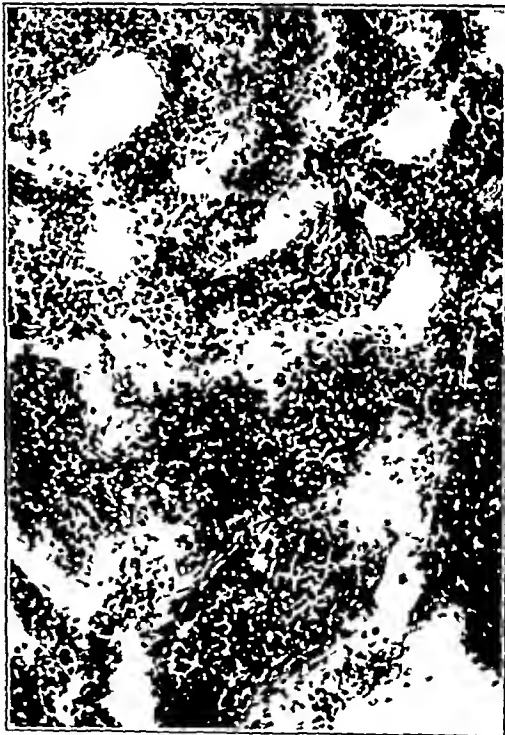


Fig 6—Anaplastic cell type IV (round cell or medullary)

of the studies were uncontrolled by suitable pathologic confirmation and therefore have to be disregarded. An occasional reported arrest of the tumor for three years, with later recurrence and death in five years, as reported

by Gantenberg,⁵ and the noted case of basal cell type of squamous carcinoma of Kahler's,⁶ in which the patient lived nine years after intensive irradiation, should be mentioned. The experience of the Memorial Hospital as recorded by Stewart,⁷ that of the Mayo

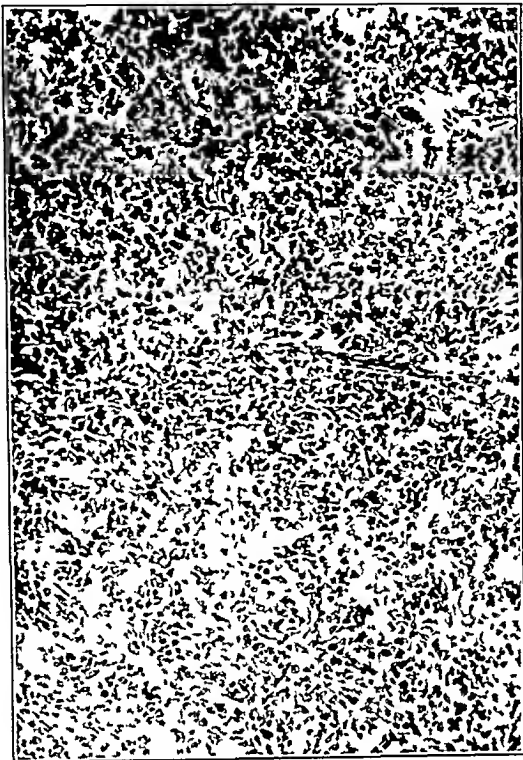


Fig 7—Anaplastic cell type V (oat cell)

Clinic, as cited by Vinson⁸ that of Kernan⁹ and our own are all surely far from auspicious in respect to the results of radiation therapy in particular and of all present day therapy in general. A tabulation of the survivals in sixty-four of our cases confirms our opinion.

Most of the therapeutic optimism is at present being displayed by the thoracic surgeon. In two of our cases thoracic surgical procedures were employed with nice palliation in one, in which the involved lobe was removed, and death one month after pneumectomy in the other. Kernan who has had a large metropolitan experience with bronchial carcinoma, stated that he has yet to witness any of the reputed surgical cures. In fact it has been intimated that many reported surgical arrests may, on further histopathologic review, be attributed to the fact

that the tumor was of the not infrequent benign type which is now classified as adenoma.

With the merits of the most approved methods of therapy thus in question it has been our practice to continue protracted intensive irradiation of the majority of these lesions by a four to six field technic with long target distance, supplemented by endo bronchial radon seed implants or, where advisable endothermic coagulation of the endobronchial proliferations. We have often noted marked palliation and occasionally an apparent arrest for periods beyond the average survival for our treated patients, but we have never had a "cure" and are naturally not satisfied with these results. We feel, however, that we must endeavor to improve our irradiation technic, as we have seen few promising surgical prospects in our material and still fewer patients who could or would submit to exploratory and possibly lethal thoracic surgical procedures. It is therefore our opinion, after considering our results and reviewing summarily those of others that the urgent need of today in the management of this lesion is both earlier diagnosis and better therapy, the type of the latter being still undecided.

SUMMARY

In sixty-five of seventy-three cases of bronchial carcinoma from the State Institute for the Study of Malignant Disease the condition was proved by histologic examination of a section obtained at biopsy or autopsy.

Although histologic study in sixty-two cases showed a universal pleomorphism, there was also a predominance of certain histopathologic architectural trends depending on the degree of cellular differentiation.

No correlation between age of occurrence, anatomic location of the primary lesion, radiosensitivity, degree of malignancy, survival and the histopathologic groups could be demonstrated.

The most common roentgen characteristics were atelectasis in the hilus or central type and tumor in the

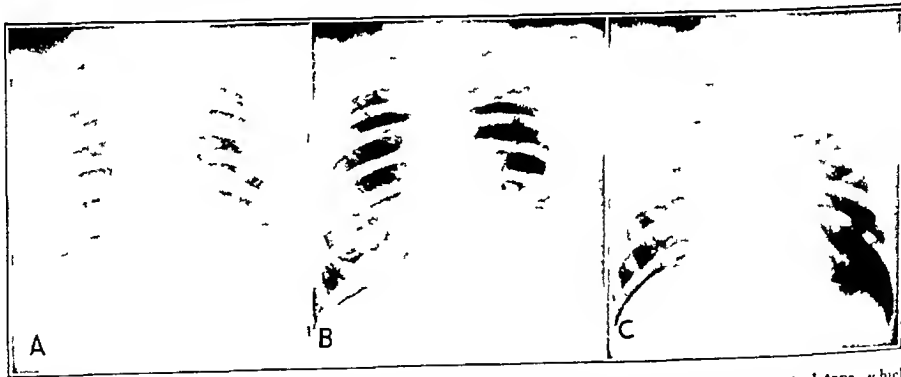


Fig 8—The three representative clinical types of bronchial carcinoma. A the hilar or central type which is the most common. B the peripheral or parenchymatous type which is less frequent and C an early film of the nonpulmonary type in which the initial complaint is due to metastases often in distant parts.

peripheral type which was found in only 11 per cent of the cases in this series.

The predominance of a central location of the primary lesion, the tendency to early and distant metastases and the marked pleomorphic picture all conspire to make the prognosis unsatisfactory by either surgical intervention or irradiation.

Earlier recognition and better therapy remain the urgent need.

113 High Street

5 Gantenberg R. Erfahrungen über Klinik und Behandlung intra thorakaler Tumoren. Strahlentherapie 4: 426 (July 25) 1933.
6 Kahler H. Durch neun Jahre geheilter Fall eines histologisch nachgewiesenen Bronchuskarzinoms. Wien klin Wchnchr 46: 1404 (Nov 17) 1933.
7 Stewart Fred W. Radio sensitivity of Tumors. Arch Surg 27: 979 (Dec) 1913.
8 Vinson P. P. Primary Malignant Disease of the Tracheo-bronchial Tree. Report of 140 Cases. J. A. M. A. 10: 258 (July 25) 1936.
9 Kernan John D. in discussion on Vinson's

ABSTRACT OF DISCUSSION

DR RALPH E MYERS, Oklahoma City Nearly five years ago I was called in consultation following an incomplete surgical removal of a tumor from the back of a patient about 50 years of age. Examination revealed that this was part of a lung carcinoma which had grown through the chest wall and destroyed about four inches of the fifth rib. In spite of the apparently unfavorable prospects, heavy roentgen therapy was administered. The patient responded amazingly and in about four months had gained over 30 pounds (13.6 Kg). Evidently the irradiation had not been quite intensive enough to destroy the tumor completely. In a few months the symptoms of pain in the region of the growth, of fever and of loss of weight intervened. The skin showed definite changes from the first treatment but after some hesitation it was finally decided that a badly damaged skin with perhaps a living patient was better than a dead patient. About four years ago and about a year after the first series, a second intensive course of roentgen therapy was applied. Today the patient appears perfectly well. He has taken good care of himself and has gone south every winter to avoid the cold. I have been pleased that he has done this as experience leads me to believe that a heavily irradiated lung is often very susceptible to infection. This spring he felt well enough to resume his former occupation. It is evident that this case was a much more favorable one for treatment than it seemed to be in the beginning. Although lung carcinoma is prone to metastasize this one evidently had not done so. Furthermore, its peripheral location permitted cross firing from several portals of entry. Unless something unforeseen intervenes this patient will probably go beyond the five year period. If not, he at least has had wonderful palliation. Surely there are other occasional cases as favorable for treatment as this one. Radiotherapists should therefore undertake the treatment of these patients with the idea that considerable palliation sometimes occurs and that even a cure is possible.

DR EDWARD L JENKINSON Chicago What type was this carcinoma?

DR MYERS It was an undifferentiated type. Its general structure was suggestive of what Dr Geschickter in the *American Journal of Cancer* (December 1934) characterized as adenocolumnar carcinoma of terminal bronchioles.

DR ORVILLE N MELAND Los Angeles I will mention briefly two cases that I had under observation and treatment. A man aged 65, who complained of dyspnea and cough, was treated by Dr Tyler in Omaha by means of x-rays first and then by the implantation of radium element needles through the bronchoscope. He came out to the coast and more needles were inserted in the bronchus. Following this there was complete disappearance of the tumor and disappearance of the atelectasis of the lower lobe. The patient lived for almost five years, he died from metastasis of the liver but there was no evidence of any trouble in the lung itself. A man aged 45 had dyspnea, cough and bloody expectoration and a tumor the size of a baseball in the right upper lobe. It was in such a location that it could not be demonstrated through the bronchoscope. He was given roentgen therapy with complete disappearance of the tumor. It is now five years since he was treated. He is perfectly well and is continuing his work as a clerk in the government service.

DR WALTER L MATTICK, Buffalo Dr Myers and Dr Meland have added a note of encouragement to radiologists. I did not intend to be so pessimistic but I again would emphasize that I am speaking only of pathologically proved cases. We have seen nice palliations in several cases, one patient particularly who was seeded with radon through the bronchoscope went along to termination with beautiful palliation. His doctor, one of the prominent thoracic surgeons, was highly satisfied and wrote a fine letter describing the marked relief this man received. I have not said anything about dosage primarily because I could not go into the question in such a short time. The dose must be the extreme if results are to be expected. I have given doses of as much as 18,000 roentgens in heavily filtered x-rays to these lesions over a period of three months.

INTERMITTENT VENOUS OCCLUSION IN
TREATMENT OF PERIPHERAL
VASCULAR DISEASEAN EXPERIENCE WITH ONE HUNDRED
AND TWENTY-FOUR CASES

WILLIAM S COLLENS, M.D.

AND

NATHAN D WILENSKI, M.D.

BROOKLYN

In attempting to determine the mechanism responsible for the clinical benefits obtained by constrictive hyperemia,¹ Lewis and Grant² found that during the period of venous congestion produced by the application of a tourniquet there occurred an increase in arterial amplitude in their plethysmographic tracings. More important, however, was their observation that when the constricting band was released there resulted an increase in arterial flow much out of proportion to the original resting period. Thus they called reactive hyperemia. Circulatory arrest created for a period of fifteen minutes would effect an increase in flow of as much as 600 per cent after release.

TABLE 1—Distribution of 124 Cases of Peripheral
Vascular Disease

	Number of Cases
Thrombo angitis obliterans	27
Peripheral vascular sclerosis (nondiabetic)	
With open lesions	8
Without open lesions	2
Peripheral vascular sclerosis (diabetic)	
With open lesions	34
Without open lesions	14
Embolus and thrombosis	7
Frostbite gangrene	1
Raynaud's disease	1
Varicose ulcers	7
Total cases	124

Barsoum and Smirk³ believe that when tissues are subjected to circulatory arrest they liberate a histamine-like substance which they have been able to demonstrate to be present in increased concentration in venous blood after the release of circulatory arrest. It is thought that this substance accounts at least in part for the creation of reactive hyperemia.

Recognizing that the temporary interruption of the venous return results in increasing arterial amplitude and that the release of the obstruction is followed by a very pronounced form of reactive hyperemia, we decided to apply both these principles in the treatment of peripheral vascular disease. This was done by the construction of an apparatus which automatically produced intermittent periods of venous compression and release of compression. The apparatus was connected to a pneumatic cuff which embraced the proximal portion of the extremity. The cuff was inflated to a pressure necessary to constrict the veins and was then released. This cycle was then continuously repeated so that the final result consisted of alternating periods

From the Department of Metabolism and Medicine, Israel Zion Hospital.

Dr. Henry Joachim, head of the Division of Medicine of the Israel Zion Hospital, cooperated in allowing us to use the material from his service.

¹ Bier August. Die Entstehung des Collateral Kreislaufs. Virchows Arch. 1 path. Anat. 147: 256 and 447, 1897.

² Lewis Thomas and Grant Robert. Observations on Reactive Hyperemia in Man. Heart 12: 73 (June) 1925.

³ Barsoum G. S. and Smirk F. H. Observations on the Increase in the Concentration of a Histamine-like Substance in Human Venous Blood During a Period of Reactive Hyperemia. Clin. Sc. 2: 353 (Dec.) 1936.

of venous congestion (Bier congestive hyperemia) and release of congestion (Lewis reactive hyperemia) We found in our experimental studies that compression of the proximal portion of the extremity up to 80 mm of mercury for alternating periods of two minutes with two minutes of release applied continuously for as much as twelve hours a day had a decided therapeutic effect in

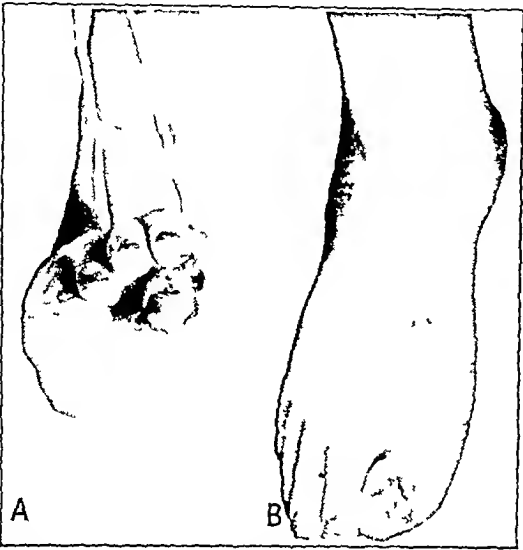


Fig 1 (case 2)—Thrombo angitis obliterans in a man aged 29 with an ulcer of six months duration marked rest pain with relief only by narcotics A before treatment B four weeks after treatment completely healed

the treatment of diseases associated with pathologic arterial changes Early reports of this method have already appeared ⁴

This method is not to be confused with the use of alternate suction and pressure in the treatment of the same group of diseases While suction and pressure are concerned with alternating periods of environmental changes in pressure with the extremity inserted in a hermetically sealed boot, our method does not in any

TABLE 2—Summary of Twenty-Seven Cases of Thrombo-Angitis Obliterans

	Number of Cases	Percentage Healed
Ulcer or gangrene	17	
Completely healed	12	71
Healing	3	
Amputation	2	
Healed and subsequently broken down	3	
		Percentage Completely Relieved
Rest pain	27	
Complete relief in 48 hours	23	85
Partial relief	3	
No relief	1	

way influence the environmental changes in pressure but consists only in intermittent interruptions of venous return by the application of a pneumatic cuff to the proximal portion of the extremity This paper is concerned with an analysis of the results of the use of this method in the treatment of 124 cases of peripheral vascular disease The distribution of these cases is seen in table 1

⁴ Collen W S and Wilenski N D The Use of Intermittent Venous Compression in the Treatment of Peripheral Vascular Disease Am Heart J 11:705 (June) 1936 An Apparatus for the Production of Intermittent Venous Compression in the Treatment of Peripheral Vascular Disease ibid 11:721 (June) 1936 The Treatment of Peripheral Obliterative Arterial Diseases by the Use of Intermittent Venous Occlusion J A M A 107:1960 (Dec 12) 1936

THROMBO-ANGITIS OBLITERANS

Our series contained twenty-seven cases of thrombo angitis obliterans A summary of these cases and results will be seen in table 2 It will be observed that all the twenty-seven patients were suffering from severe rest pain and intermittent claudication There was complete relief of pain in 85 per cent within forty eight hours after the introduction of treatment Of the seventeen cases presenting ulcers twelve healed completely (71 per cent) There was a remarkable

TABLE 3—Oscillometric Readings Before and After Treatment

Oscillometric Readings	Before Treatment		After 2 Weeks Treatment	
	Right	Left	Right	Left
Midthigh	Trace	1/4	2 1/2	2 1/4
Below knee	0	0	1/4	1/2
Above ankle	0	0	Trace	Trace
Dorsalis pedis artery	0	0	Trace	Trace
Venous filling time	17 sec	13 sec	15 sec	12 sec

increase in the patients' walking capacity The following are reports of typical cases

CASE 1—N M, a man, aged 40, Jewish, complained for three years of intermittent claudication which became progressively worse, so that at the time of admission to the hospital he was able to walk only one block without claudication He had frequent attacks of migrating phlebitis He also complained of severe rest pain, especially at night He was compelled to cease smoking and had been treated by diathermy, baking massage, hot and cold contrast baths and roentgen therapy of the lumbar spine without relief Examination disclosed evidence of main arterial obstruction in addition to the presence of two phlebotic lesions on the lower third of the right leg No pulsations were obtained in the dorsalis pedis, posterior tibial or popliteal arteries Oscillometric readings and venous filling time before institution of treatment are seen in table 3

The patient was put to bed with a cradle baker over his legs at a temperature of 95 F, and intermittent venous compression was applied to the thigh at 60 mm of pressure for

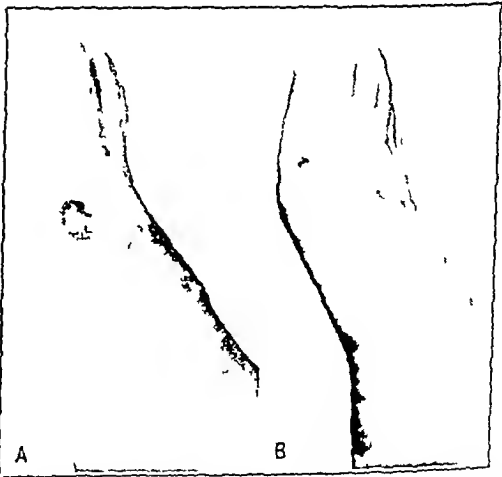


Fig 2 (case 4)—Arteriosclerotic ulcer of fourteen months duration in a man aged 74 it has a dirty gray base is painful and is becoming progressively larger A before treatment B four weeks after treatment complete healing

two minutes on and off This treatment was maintained continuously for forty-eight hours day and night Following this it was reduced to eight hours a day but the pressure was increased to 90 mm Within twenty four hours all of the rest pain disappeared The phlebotic lesions were gone on the second day The patient was discharged from the hospital on the third day and was subsequently treated as an ambulatory patient receiving two hours of treatment daily There was a very remarkable

increase in his walking capacity from 200 feet to 1500 feet. It will be noted in table 3 that there was an increase in the oscillometric readings and a reduction in the venous filling time indicating a definite increase in the vascular capacity of the extremity. It is also interesting to note that after four weeks of treatment there appeared a growth of hair on the dorsum of the toes, foot and tibial crest.

CASE 2—L. L., a man, aged 29, Jewish, gave a history of an ingrown toenail on the right large toe two years before

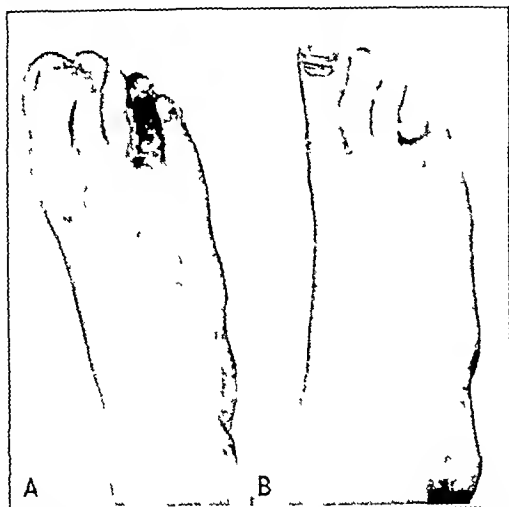


Fig 3 (case 5)—A diabetic man aged 59 with osteomyelitis of the fourth toe of five weeks duration presenting secondary infection lymphangitic streaks and edema of the foot and closed major arterial pathways mid thigh amputation had been advised. A before treatment B twelve weeks after treatment spontaneous expulsion of sequestrum with complete healing. Note signs of regeneration of nail of the great toe.

admission which took one year to heal. For the past year he had complained of intermittent claudication, being unable to walk more than one block. There was an unbearable numbness in the feet, which disappeared on rest. Six months before admission a very painful ulcer developed on the right great toe, which became progressively worse in spite of the therapy he received. He was treated at the Presbyterian Hospital for a short time and subsequently at the Beth Israel Hospital. His

TABLE 4—Summary of Cases of Peripheral Vascular Sclerosis (Nondiabetic)

	Number of Cases	Per Cent
Total number of cases	33	
Males	28	
Females	5	
Incidence of open lesions	8	24
Pain relief		
Complete relief in 48 hours	27	82
Partial relief	4	12
No relief	2	6
Ulcers or gangrene		
Ulcers completely healed	4	100
Gangrene	4	
Completely healed	1	25
Healing	2	50
Failed	1	25

treatment consisted of suction and pressure and daily intravenous injections of hypertonic saline solution during his hospital stay. He had also received diathermy and had stopped smoking and was given bed care. On discharge from these institutions his condition was unchanged. Examination disclosed definite evidence of organic peripheral vascular disease. There were no palpable pulsations in the feet or legs. The oscillometric readings showed a trace at the mid thigh of both the right and the left leg and 0 below the knee at the ankle and at the dorsalis pedis artery of both legs. The venous filling time was 50 seconds in the right and 30 seconds in the left foot.

There was a cyanotic rubor of the right foot in the dependent position and it was colder than the left. An unhealthy ulcer one-half inch in diameter and very tender to touch was present, with surrounding edema. In view of his age and the absence of calcification of vessels in the x-ray films a diagnosis of thromboangitis obliterans with a gangrenous ulcer of the right great toe was made. He came to the hospital in great pain and was consuming large quantities of codeine and salicylates to get some relief. The patient was given continuous intermittent venous occlusion at 30 mm of pressure. There was a remarkable relief of pain within twenty-four hours and at the end of

TABLE 5—Oscillometric Readings in Case 3

	Before Treatment		After Two Weeks of Treatment	
	Right	Left	Right	Left
Thigh	1½	Trace	2	¼
Below knee	0	0	½	¼
At the ankle	0	0	Trace	Trace
Venous filling time	13 sec	15 sec	8 sec	10 sec
Walking ability increased from 80 to 900 feet				

two days islands of healthy granulation tissue began to appear in the base of the ulcer. One week after admission the entire base was covered with healthy granulations. At the end of four weeks the patient walked out of the hospital with complete epithelization of the ulcer and free from pain. Figure 1 shows the ulcer before and after treatment.

ARTERIOSCLEROSIS OBLITERANS (NONDIABETIC)

We collected thirty-three cases in this series in which twenty-eight patients were males and five were females. It will be noted from table 4 that complete relief of pain within forty-eight hours was obtained in 82 per cent of the cases. Four patients who came to us with chronic indolent ulcers were entirely healed.

CASE 3—J. H., a man, aged 66, Jewish, gave a history of intermittent claudication of ten years' duration. The symptoms had been getting progressively worse and the distance that he had been able to walk before cramps developed in the legs was getting shorter. Within the last two years he had begun to complain of a considerable degree of rest pain keeping him awake at night and necessitating the use of large doses of narcotics. His previous treatments had consisted of baking, rest, contrast baths and diathermy. Physical examination was



Fig 4 (case 6)—Diabetic gangrene in a woman aged 58 with closed major vessels gangrene and osteomyelitis of the third toe edema of the foot lymphangitis and fever. A before treatment B spontaneous expulsion of sequestrum. Note exuberant granulation tissue two weeks after treatment C four weeks later completely healed.

negative except for the condition in the lower extremities. The feet were cold, the skin was dry and no pulsations were obtained in all the major vessels. The venous filling time was thirteen seconds in the right and fifteen seconds in the left foot. At the rate of 11 paces every five seconds he was unable to walk more than 350 feet before claudication developed. In view of his age the diagnosis of peripheral vascular sclerosis was made. He was not diabetic. He was given intermittent venous compression at 80 mm for two weeks. All the rest pain was completely relieved within twenty-four hours. Oscillometric readings were improved.

Case 4 illustrates our experience with a case of peripheral vascular sclerosis with a chronic indolent ulcer on the right great toe of fourteen months' duration.

CASE 4—A man aged 74, Jewish, bedridden, complained of severe rest pain and inability to walk. He had been unsuccessfully treated with various ointments, wet dressings, baths, baking and diathermy. On admission he presented all the signs of chronic obliterative arterial disease with marked obstruction of the sclerotic type. His feet were cold, there were no pulsations, and oscillometry showed no readings below the knees. There was a dirty gray infected ulcer on the medial surface of the right great toe with surrounding edema, redness and marked tenderness (fig 2 A). X-ray examination showed calcification of the major vessels. Intermittent venous occlusion was applied continuously at 50 mm. In twenty-four hours the pain was entirely gone. On the fourth day islands of healthy granulation tissue began to appear. In four weeks the ulcer was completely healed (fig 2 B).

ARTERIOSCLEROSIS OBLITERANS (DIABETIC)

There are forty-eight cases in this group in which twenty-two patients were males and twenty-six females. Seventy-one per cent of the entire group had open lesions. It will be noted in table 6 that 60 per cent

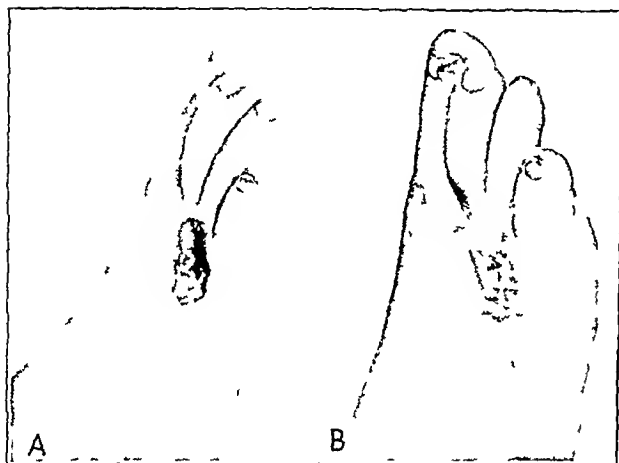


Fig 5—Case of thrombo-angitis obliterans of fourteen years duration closed major vessels ulcer of seven years duration no healing treated continuously by Dr. Samuels for seven years three times a week with hypertonic saline solution intravenously. A before treatment B five weeks after treatment complete healing.

were completely relieved of pain in forty-eight hours and 33 per cent were partially relieved. There occurred complete healing of lesions in 76 per cent of our cases and 24 per cent came to amputation.

The following cases are examples of our experience in this group.

CASE 5—M. A. a man aged 59, Jewish, had had a relatively mild degree of diabetes for ten years. He had been suffering from an infected right fourth toe which became progressively worse for five weeks before admission. Pain was very severe and kept him awake at night. During his stay in another hospital mid thigh amputation was advised because of the spreading lymphangitis and fever associated with progressive gangrene. On admission he showed the presence of an area of gangrene involving the middle portion of the dorsum of the right fourth toe. This gangrenous patch was firmly adherent to the deeper structures. The toe was red and swollen (fig 3 A). There was edema on the dorsum of the foot and lymphangitic streaks were present. X-ray examination disclosed the existence of osteomyelitis of the middle phalanx and calcification of the major vessels. No pulsations were obtained. Oscillometric readings were absent in both legs below the knees. There was a marked delay in the venous filling time. The diagnosis was diabetes arteriosclerosis obliterans and osteomyelitis with gangrene of

the fourth right toe. The patient was given intermittent venous occlusion at 50 mm of mercury and the relief of pain was almost immediate, occurring within eight hours.

This treatment was given for twelve hours daily. At the end of two weeks islands of granulation tissue and bleeding points began to appear in the margins of the gangrenous slough.

TABLE 6—Summary of Cases of Peripheral Vascular Sclerosis (Diabetic)

	Number of Cases	Per Cent
Total number of cases	48	
Males	22	
Females	26	
Incidence of open lesions	24	71
Pain relief		
Complete relief of pain	29	60
Partial relief of pain	11	
No relief of pain	8	7
Ulcer and gangrene		
Total number of cases	24	
Healed	21	87
Healing	4	
Failures		
No healing	1	
Amputation	3	21

At the end of four weeks there occurred a spontaneous extrusion of the sequestrum, which was easily picked out with a pair of forceps. Following that the base of the ulcer showed a progressive growth of healthy granulation tissue. In twelve weeks the patient was discharged with the toe completely healed (fig 3 B).

CASE 6—M. G., a woman, aged 58, Jewish, had been diabetic for twelve years. She also had hypertension (220 systolic 110 diastolic) and peripheral vascular sclerosis. She had been receiving a high carbohydrate diet with 15 units of insulin once a day for one year. Two weeks before admission because of marked rest pain and coldness in the feet associated with peripheral vascular sclerosis she had applied a thermalite biker to the feet and sustained a burn with bleb formation on the dorsum of the middle toe of the right foot. This burn became infected, tissues broke down and when she appeared for examination there existed a gangrenous lesion with ulceration covering the entire dorsum of the third toe (fig 4 A). The surrounding region was red and edematous. The temperature was 101 F. Oscillometric readings showed 0 above the ankle and one fourth below the knee. No palpable pulsations were obtained in the leg. The venous filling time was thirty-two seconds. The X-ray films showed osteomyelitis involving the middle phalanx of the third toe. The carbohydrate tolerance was broken obviously the result of the infection. The patient was put to bed, a warm boric acid dressing was applied to the foot, a cradle biker was put in place to maintain the environmental temperature at 95 F., and intermittent venous compression

TABLE 7—Summary of Cases of Embolus and Acute Arterial Thrombosis

	Number of Cases
Total number of cases	7
Relief of pain complete in 8 hours	4
Completely recovered	4
Amputation and died	1
Died from other cause	2
no amputation	

was given at 40 mm alternating two minute cycle continuously. The patient experienced a very prompt relief of pain. In three days there was extensive bleeding from the lesion. After ten days of treatment the sequestrum was expelled. This was most unusual about this case was the appearance of exuberant granulation tissue (fig 4 B). This was the first time that we had seen the appearance of exuberant granulations in a lesion on an extremity which had an interference in circulation from obliterative arterial disease. It was so pronounced that we found it necessary on three occasions to apply a silver nitrate stick, a procedure which we otherwise would have carried out with great trepidation under conditions associated with

peripheral vascular obstruction. Four weeks after admission the patient was discharged with epithelization and complete healing of the lesion (fig 4C).

We have included in our series seven cases comprising a group in which there were acute embolic phenomena to the major vessels of the lower extremity or thrombosis. One patient suffering from subacute bacterial endocarditis had an embolus to the right popliteal artery. Two patients with auricular fibrillation had emboli in the femoral artery and four patients with peripheral vascular sclerosis had attacks of acute popliteal thrombosis. In all the cases a remarkable relief from pain was noted within eight hours. Three patients completely escaped gangrenous destruction. One patient in whom a patch of gangrene had developed on the great toe recovered completely. In the patient with subacute bacterial endocarditis a small patch developed on three toes, but she died three weeks later from a cerebral embolus. One patient with auricular fibrillation in whom gangrene of the foot developed was a poor operative risk and died of congestive heart failure. The seventh had a mid thigh amputation and died two days after operation (table 7).

There are also included seven cases of large chronic varicose ulcers of long standing, all of which healed completely. The details of these cases will be presented in a separate communication.

COMMENT

An important problem which always arises in a clinical investigation is concerned with establishing adequate control conditions. It is very obvious in a group such as this that bed rest, the continuous maintenance of an environmental temperature at 95 F and the elimination of tobacco would in themselves play a part in producing beneficial effects. We must state, however, that most of our patients had already experienced this form of control before coming under our care and that the only variable which we created was that of introducing a state of intermittent venous compression.

An examination of our tables of peripheral vascular sclerosis discloses some rather interesting information. It will be noted that there was a somewhat larger incidence of arteriosclerosis obliterans in diabetic than in nondiabetic patients. Yet there occurred a remarkable difference in sex distribution. While among the nondiabetic patients 85 per cent were males, in the diabetic group only 46 per cent were males. This is easily understandable when one realizes that diabetes occurring in later life is predominantly in females. Another important phase of this subject deals with the incidence of ulcer and gangrene. While 24 per cent of the nondiabetic group presented open lesions, 71 per cent of the diabetic group was similarly affected. This simply means that, although sclerotic changes in peripheral blood vessels occur in the nondiabetic almost as frequently as in the diabetic, the vulnerability of diabetic tissues to infection results in thrombotic processes that subsequently terminate in death of tissues.

It is very obvious that no procedure can change the structural characteristic of an organically altered major blood vessel. We do not believe that an artery obliterated by sclerotic degenerative changes can be made subsequently to permit the transport of blood. Any attempt at improving the vascular capacity of an extremity whose major vessels had been obliterated by degenerative changes can be effected only through the development of a collateral circulation or through the release of a spastic phase of a partially obliterated

artery already organically altered. This we believe can be accomplished by very powerful and active local vasodilatation. Lewis and Grant in their studies thought that the active vasodilatation which followed the discontinuance of temporarily interrupted circulation was the result of the release from tissue cells of an H substance which possessed strong vasodilator effects. We have found in our own plethysmographic studies of patients suffering from thrombo-angitis obliterans or sclerotic obliterative arterial disease that at the height of venous congestion and during the state of reactive hyperemia the arterial amplitude increased to such a remarkable extent that diastolic pressure in the pulse could occasionally be observed.

In analyzing the beneficial effects of alternating suction and pressure we are of the impression that the phase of suction which builds up a negative pressure far greater than intravenous pressure results in venous congestion. Any one looking through the transparent cellulose acetate boot at the extremity during the phase of suction will see the enormous distention of the superficial veins with a cyanotic flush of the extremity, which is obviously venous congestion. We do not see any benefits that can be derived from the pressure phase of suction and pressure. We can, however, understand that the pressure phase can have deleterious effects for two reasons, first, it encourages the active introduction of infected thrombotic material from the margins of ulcers and gangrene, second it retards the development of reactive hyperemia which must follow the phase of suction. This may explain the reason for the numerous accidents that occur following the use of suction and pressure and also the reason for the great many contraindications that have been built up by men working with it. If that is the mechanism responsible for the beneficial effects derived from our method as well as the suction phase of suction and pressure, we feel that our procedure is capable of producing a more profound therapeutic effect because of the ability to apply venous compression for longer periods than suction. Lewis and Grant definitely demonstrated that the longer the venous congestion was applied and the greater the degree of pressure up to 90 mm of mercury, the more profound was the reactive hyperemia.

Lewis and Grant made a significant observation when they noted a direct relationship between the degree of reactive hyperemia and the environmental temperature of the extremity. They found when they maintained venous compression at the same level and for the same periods but altered the environmental temperature that the higher the temperature the more pronounced was the reactive hyperemia. On the basis of this observation we have recently modified our technic in the treatment of the ambulatory case and taken advantage of this important observation. When the patients come for daily treatments a short wave or diathermy apparatus is used with a flat plate electrode applied to the plantar surface of the foot and a cuff electrode placed below the knee. The pneumatic cuff for producing intermittent venous compression is at the same time applied at the mid thigh and the two treatments are given simultaneously for approximately one hour. We have been significantly impressed with the marked clinical benefits that are obtained when the phenomenon of reactive hyperemia is thus accentuated by elevating the temperatures of the deeper structures. The surface temperature of the leg need not be elevated higher than 100 F.

It will be noted from our tables that we had a certain percentage of failures, especially pronounced in the diabetic patients suffering from peripheral vascular sclerosis and gangrene. In our series of thirty-four cases of diabetic ulcer or gangrene, 24 per cent came to amputation. That figure is vastly lower than commonly quoted figures of 50 per cent under the influence of all other methods of treatment. We do not claim that this is a cure-all for every case of obliterative vascular disease, but one must recognize the limitations of any method when one is contending with a case which presents such profound vascular obliteration that the potential collateral flow becomes involved. Under such circumstances a certain percentage of these cases must eventually come to amputation. It then becomes a question of lowering that figure by methods which are capable of favorably influencing extremities that have the capacity to improve collateral arterial flow.

We feel that our method is capable of increasing vascular capacity, as is evidenced by the following phenomena: relief of rest pain, increase of walking capacity, regeneration of tissues, improvement in the nutrition of nails, and the growth of hair over areas which had become denuded as the result of obliterative arterial disease. We were able to note in one case the development of granulation tissue to such a degree of exuberance that it necessitated the use of silver nitrate on three different occasions in order to prevent the development of keloid.

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STUDIES OF THE BLOOD CHEMISTRY IN THYROID CRISIS

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In reviews of the cause of death from goiter, thyroid crisis generally accounts for more than half of the mortality.¹ At the University Hospital from 1925 through 1933, 70 per cent, or eighty-eight, of the 123 deaths from goiter were due to this cause. Fifty-one of these eighty-eight occurred in the medical service,² before the patient could be improved to a point at which an operation might be considered, and thirty-seven occurred postoperatively.³ The same greater frequency of preoperative deaths from crisis was reported by Lahey⁴ in 1928.

Our interest in thyroid crisis was aroused because of the apparent futility of treatment once this complication becomes well established. This particular ineffectiveness has been recognized for years, and emphasis has properly been placed on elimination of the factors known to precipitate a crisis and on the adequate use of measures to ward off or lessen an

impending crisis,⁴ whether it is before or after the operation. As a result of constant vigilance, the reaction of the majority of patients operated on for hyperthyroidism is now mild. In a few instances the fever, tachycardia, sweating and restlessness are a little greater than desired, but usually these signs subside in from twenty-four to forty-eight hours. Fortunately a reaction severe enough to be called a thyroid crisis is encountered only at rare intervals.

As one observes a patient in a thyroid crisis the impression is that profound toxemia is present. Metabolic processes appear to be so tremendously disturbed that some alteration in body chemistry producing the effect ought to be discoverable and ought to be measurable if only one knew what to measure. In the hope of finding significant data in this regard we made a number of preoperative and postoperative studies of the blood chemistry on patients with hyperthyroidism during the past two years.⁵ The investigating staff was constantly on the alert to apply the studies to patients with severe reactions, and a few patients in typical thyroid crisis were available.

CHIEF ELECTROLYTES OF THE BLOOD

It is reasonable to believe that if any serious disturbance of the electrolytes were present in the blood of patients with hyperthyroidism the abnormality would have been found previously, since extensive general studies have been made. A few suggestions for possible investigation, however, were found.

Sodium—Schneider⁶ has reported extreme depletions of the serum sodium content in hyperthyroidism, one patient having only 53 mg per hundred cubic centimeters, which is about 16 per cent of the normal. We found essentially normal values for serum sodium for ten patients with hyperthyroidism, two of whom died preoperatively and one postoperatively of thyroid crisis.⁷ This lead was not helpful to us or to Feldmaus⁸ and Pemberton.¹

Potassium—A study of this ion in relation to thyroid crisis was suggested for three reasons: (1) the fact that potassium is a toxic substance,⁹ (2) the statement that all the effects of epinephrine—a substance possibly concerned with thyroid crisis—can be produced by potassium¹⁰ and (3) the fact that the serum potassium content is found to be increased immediately after injections of epinephrine.¹¹ Determinations of the serum potassium were made on fifteen patients with hyperthyroidism, and the values obtained were all essentially normal, even the value for a specimen taken postoperatively two hours before death from a patient with a temperature of 105 F. Pemberton¹ found a normal serum potassium content in two patients dying from severe postoperative hyperthyroid reactions. Serum potassium values much higher than any we

5 Maddock W. G., Collier, F. A. and Pedersen Svend. Thyroid Crisis: Its Relation to Liver Function and Adrenaline. *West. J. Surg.* 44: 513 (Sept.) 1936.

6 Schneider, Erich. Concerning the Broadening of the Indications for Operation in Exophthalmic Goiter Through the Recognition at the Bedside of a Secondary Thyrogenic Injury to the Liver. *Internat. Clin.* 2: 87 (June) 1934.

7 Pedersen Svend, Maddock W. G. and Collier F. A. Serum Sodium in Relation to Liver Damage and Hyperthyroidism. *Proc. Soc. Exper. Biol. & Med.* 36: 491 (May) 1937.

8 Feldmaus B. Ueber das Verhalten des Natriumspiegels im Plasma bei thyreotoxischen Zuständen. *Acta med. Scandinav.* 88: 39 (1937).

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10 Camp W. J. R., and Higgins J. A. The Role of Potassium in Epinephrine Action. *J. Pharmacol. & Exper. Therap.* 57: 376 (1936).

11 D. Silva J. L. The Action of Adrenaline on Serum Potassium. *J. Physiol.* 86: 219 (Feb. 8) 1936. Action of Adrenaline on the Liver. *ibid.* 57: 181 (July 21) 1936.

From the Department of Surgery of the University of Michigan. This investigation was assisted by a grant from the Horace H. Rackham Fund for Graduate Studies.

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1 Goetsch, Emil. Criteria of Operability for Goiter. *Minnesota Med.* 18: 631 (Oct.) 1935. Pemberton J. deJ. Postoperative Hyperthyroidism. *West. J. Surg.* 44: 521 (Sept.) 1936.

2 Bayley R. H. Thyroid Crisis. *Surg., Gynec. & Obst.* 59: 41 (July) 1934.

3 Ransom H. K. and Bayley R. H. Thyroid Crisis. *West. J. Surg.* 42: 464 (Aug.) 1934.

4 Lahey F. H. The Crisis of Exophthalmic Goiter. *New England J. Med.* 109: 250 (Aug.) 1928.

found have been observed in patients with other conditions¹² showing no evidence of toxicity

Calcium and Phosphates—More than forty years ago it was pointed out that disorders of the bony skeleton appeared to be associated with hyperthyroidism. That the administration of thyroid gland to rabbits markedly increases the urinary output of calcium was definitely shown by Parhon,¹³ and Aub and his associates¹⁴ furnished conclusive proof of an

hepatic function tests dealing with the disturbance of carbohydrate metabolism, Kugelmann²⁰ concluded that not only does the liver of the hyperthyroid subject show a failure to store glycogen but it is unable to convert large amounts of levulose to dextrose, a process easily accomplished by the normal liver

With this evidence of disturbed hepatic function and severe hepatic disease at hand, our point of interest was whether or not the postoperative reaction of the patients was due to hepatic damage. The pathologic process in the liver was certainly extensive, and of possible significance is the fact that hyperthermia accompanies other so-called liver deaths.²¹

From the considerable number of tests available²² for estimations of hepatic function three measurements were chosen: (1) the blood bilirubin contents, (2) the excretion of bromsulphalein dye and (3) the amino acid nitrogen content of the blood. This selection was made for the following reasons:

The finding of abnormal amounts of bilirubin in the blood stream reflects the bilirubin excretory function of the liver unless excessive amounts of bilirubin are being formed as a result of increased hemolysis of erythrocytes. If this condition has not occurred and there is no obstruction to the excretory ducts of the liver, the finding of hyperbilirubinemia indicates impairment of function of the liver parenchyma. Studies have shown that such impairment must be moderately advanced and generalized before abnormal values for blood bilirubin, above 3 mg per liter, are obtained. From the extent of the hepatic lesions observed at autopsy on patients who died of hyperthyroidism, abnormal results from this test were expected.

Among the various dye excretion tests, that in which bromsulphalein is used and 5 mg per kilogram of body weight²³ administered was most desirable. As for the

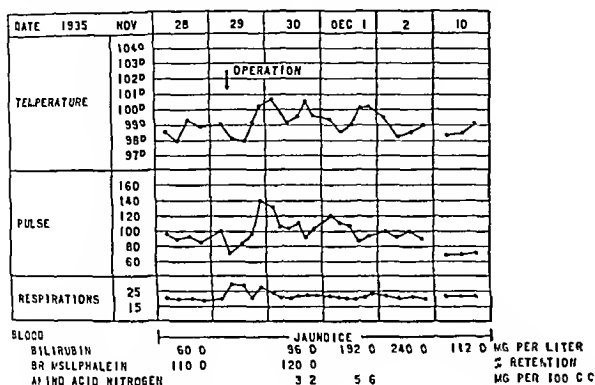


Chart 1 (case 1)—Mild postoperative course in spite of considerable evidence of impaired hepatic function

increased excretion of calcium and inorganic phosphate by human beings with hyperthyroidism. In spite of this marked abnormality Aub¹⁴ found normal values for these constituents in the serum. Similar normal values were found for the patients of this study.

In summary, our search for abnormalities of inorganic ion concentrations in the blood of patients with hyperthyroidism has not been fruitful.

HEPATIC FUNCTION IN HYPERTHYROIDISM

From various sources evidence has accumulated to show that damage to the liver occurs in hyperthyroidism. Clinical reports of jaundice¹⁵ are not infrequent, and the diagnosis of acute yellow atrophy¹⁶ has been made on a few occasions. In a study of the hepatic pathology, Weller¹⁷ observed well marked chronic parenchymatous hepatitis at autopsy in twenty-two of forty-four selected cases of exophthalmic goiter, while but one example of the same degree of change was found in a control series of the same number of autopsies. Beaver and Pemberton¹⁸ similarly found a high incidence of degenerative changes in the liver of patients dying of hyperthyroidism. Studies of the hepatic function are in accord with these data, Youmans and Warfield¹⁹ having shown impairment in the excretion of phenoltetrachlorophthalein dye in 50 per cent of forty-four patients studied. From a review of

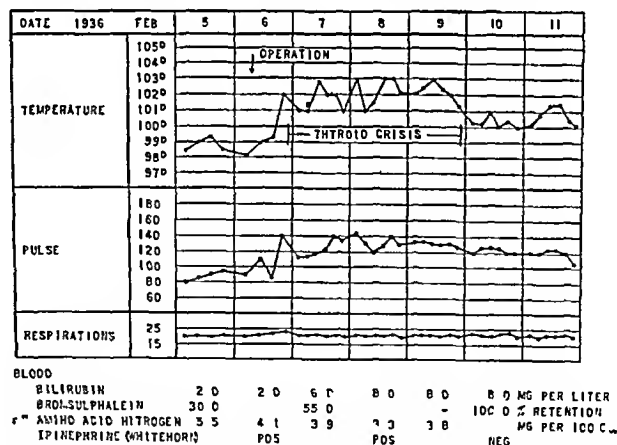


Chart 2 (case 2)—Severe postoperative thyroid crisis with only moderate evidence of impaired hepatic function

determination of bilirubin rather widespread and extensive hepatic disease is necessary to cause an abnormal result, which is more than 10 per cent retention of the dye at the end of one-half hour. An advantage of this test for a continued study, such as ours, was

20 Kugelmann Bernhard. Leber Störungen im Kohlehydratstoffwechsel beim Morbus Basedow. *Klin Wchnschr* 9: 1533 (Aug.) 1930.

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22 Soffer L. J. Present Day Status of Liver Function Tests. *Medicine* 14: 185 (May) 1935.

23 Soffer L. J. (New York) Personal communication to the author. Bollman J. L. (the Mayo Clinic) Personal communication to the author.

12 Keith N. M. and Binger N. W. Diuretic Action of Potassium Salts. *J. A. M. A.* 105: 1534 (Nov. 16) 1935.

13 Parhon M. L. Influence de la thyroïde sur le métabolisme du calcium. *Compt rend Soc de biol* 72: 620 (March) 1912.

14 Aub J. C. Bauer Walter, Heath Clark and Ropes Marion. Studies of Calcium and Phosphorus Metabolism. III. The Effects of the Thyroid Hormone and Thyroid Disease. *J. Clin Investigation* 7: 97 (April) 1929.

15 Eder M. D. Three Cases of Jaundice Occurring in Persons Suffering from Exophthalmic Goiter. *Lancet* 1: 1758 (June) 1906. Mahorner H. R. Jaundice Associated with Hyperthyroidism. *New Orleans M. J.* 87: 382 (Dec.) 1934.

16 Kerr W. J. and Rusk G. L. Acute Yellow Atrophy Associated with Hyperthyroidism. *M. Clin North America* 6: 445 (Sept.) 1922. Raab W. and Terplan C. Morbus Basedow mit subakuter Leberatrophie. *Med Klin* 19: 1154 (Aug.) 1923.

17 Weller C. V. Hepatic Pathology in Exophthalmic Goiter. *Ann Int Med* 7: 543 (Nov.) 1933.

18 Beaver D. C. and Pemberton J. deJ. The Pathologic Anatomy of the Liver in Exophthalmic Goiter. *Ann Int Med* 7: 687 (Dec.) 1933.

19 Youmans J. B. and Warfield L. M. Liver Injury in Thyrotoxicosis as Evidenced by Decreased Functional Efficiency. *Arch Int Med* 37: 1 (Jan.) 1926.

brought out by Soffer,²² who stated that, although there is apparently only a rough quantitative relationship between the degree of retention of the injected dye and the hepatic damage in any patient who is observed over an extended period with this test, the results will indicate whether the hepatic lesion is becoming more extensive or is regressing.

The determinations of the amino acid nitrogen in the blood²⁴ were a search for evidence of profound hepatic damage. The deamination of amino acids in man occurs mainly in the liver, and this function is lost only in the terminal stage of acute yellow atrophy.²⁵ For the patients with hyperthyroidism essentially normal values were found, and the data obtained will be shown in only two cases (charts 1 and 2).

mal and the retention of dye being practically complete in the majority of cases. Using the hippuric acid test on a group of patients with hyperthyroidism, Lahey and Bartels²⁶ found increased impairment of the hepatic function on the sixth postoperative day. Patients operated on for other diseases have not regularly shown the same disturbance of hepatic function.²⁷ This evidence of hepatic dysfunction on the day after the operation is in accord with the observation of a high percentage of acute degenerative changes in the liver of patients who have died of hyperthyroidism, many in the immediate postoperative period.

4 On succeeding days the hepatic function of the patients improved a variable time being necessary before it returned to the preoperative level.

Evidence of Impaired Hepatic Function in Patients with Hyperthyroidism from Data on the Blood Bilirubin and the Bromsulfalein Excretion

Toxic Goiter		Age	Basal Metabolic Rate	Preoperative		Day of Operation	Postoperative Days											
				Blood Bilirubin Content, Mg	Dye Retention, %		I		II		III		IV		Mg	%		
							Mg	%	Mg	%	Mg	%	Mg	%				
1	30	+25	2	10		8	110											
2	42	+52	2	10		10	100	2	50							VI	2	
3	42	+34	2	10		6	80			6	50					VII	2	
4	33	+10	2	10		24										VIII	2	
5	49	+1		10	12	10	12	90					12			IX	4	
6	30	+50	2	20			8	115			10	50				X	1	
7	60	+30		60			8	120			4	90				XI	1	
8	60	+30	4	30			5	100								XII	1	
9	61	+39	2	10			10	170					4	100		XIII	1	
10	63	+41	60	110			90	120	102		12	100				XIV	112	
11	39	+77	4	20			12	120			240					XV	2	
12	17	+70	2	70	2		6	50	8				8	100		XVI	8	
13	36	+7	2	40			3	80								XVII	3	
Nontoxic Goiter																		
14	36	+30	2	0			2	5			2	20						
15	27	+2	2	0			2	10										
16	29	+11	2	0			4	20			2	50						
17	35	-2	2	10			3	30								XVIII	2	

* Retention of 100 per cent or more of the dye is considered to be total. The apparent paradox of more than 100 per cent retention is due to the fact that the colorimeter standards developed originally for the administration of 2 mg of the dye per kilogram of body weight have been retained although a 5 mg dose is used. Differentiation of color with higher standards was found to be difficult.

In the accompanying table are presented the values for blood bilirubin and the data on bromsulfalein for the seventeen patients studied. The following points were significant:

1 Eight, or 61 per cent, of the thirteen patients with toxic goiter showed evidence of impaired hepatic function preoperatively, by having a blood bilirubin content above 3 mg per liter, a retention of bromsulfalein dye of more than 10 per cent or both.

2 A relationship between the severity of the hyperthyroidism and the hepatic damage was shown, first, by the finding of normal hepatic function in four patients with nontoxic thyroids studied as a control group and, secondly, by the finding of an average basal metabolic rate of only +33 per cent for the five toxic patients with normal hepatic function, in contrast to an average of +54 per cent for the eight toxic patients with evidence of hepatic damage. The same direct relationship between the extent of the pathologic process in the liver and the severity of the disease was found by Beaver and Pemberton¹⁰ in a correlation of clinical and postmortem data.

3 The operation produced a marked effect. On the first postoperative day the data whether normal before or not, showed a striking impairment of hepatic function, the blood bilirubin content being above nor-

mal and the retention of dye being practically complete in the majority of cases. Three cases in particular emphasized this.

CASE 1—*Considerable evidence of hepatic damage and mild postoperative reaction.* E H, a woman, aged 46, on admission to the hospital had a history of goiter of thirty years' duration, symptoms of severe thyrotoxicosis for two years and intermittent jaundice for the past six months. No cause for the jaundice except toxic hepatitis could be found. The course in the medical service was unsatisfactory, the basal metabolic rate increased from +36 per cent to +60 per cent, the jaundice increased and a continued loss of weight and diarrhea occurred. Operative treatment was decided on, and a right hemithyroidectomy was done. Postoperatively the patient's general condition was good in spite of a marked rapid increase in the yellowness of the skin to a canary color. The clinical observations, showing a comparatively mild postoperative reaction, and the data on hepatic function, with, most significantly, the blood bilirubin up to 240 mg per liter on the third postoperative day, are given in chart 1. At an examination three months later the blood bilirubin content was normal.

CASES 2 and 3—*Only moderate evidence of hepatic damage and severe thyroid crisis postoperatively.*

In D H, a girl aged 17, goiter developed three years previous to admission. All the symptoms and signs of exophthalmic goiter were present. The initial metabolic rate was +70 per cent and the subsequent improvement was

²⁴ Daniel on J. S. Amino Acid Nitrogen and Its Determination. *J. Biol. Chem.* 101:503 (July) 1933.
²⁵ Stadie W. C. and Van Slyke D. D. The Effect of Acute Yellow Atrophy on Metabolism and on the Composition of the Liver. *Arch. Int. Med.* 25:693 (June) 1920.

²⁶ Lahey F. H. Stage Operations in Severe Hyperthyroidism. (Citing the work of C. E. Bartels in the medical department of the Lahey Clinic). *Ann. Surg.* 104:961 (Dec.) 1936.
²⁷ Coleman F. P. Unpublished data.

irregular and slow. Severe thyroid crisis developed about eight hours after a right hemithyroidectomy was done and continued for three days. The clinical observations and the data on the blood chemistry are shown in chart 2. The blood bilirubin content and the retention of bromsulfalein during the time of the crisis were not nearly as high as the values found for several other patients with comparatively normal postoperative courses. Throughout the height of the reaction the amino acid nitrogen content of the blood, which is increased in profound hepatic damage, was unchanged. The occurrence of acute pulmonary edema during the crisis and the epinephrine study will be discussed later.

V B, a woman, aged 36, was admitted to the medical service in a condition of thyroid crisis. The first metabolic rate obtained was +75 per cent. With careful treatment her response was considered to be satisfactory enough to allow multiple stage operations. Approximately thirty hours after a hemithyroidectomy a typical crisis developed, and she died twelve hours later. Evidence of hepatic damage twenty hours before death was only moderate. The amino acid nitrogen content of the blood was entirely normal. This patient also had acute pulmonary edema during the thyroid crisis.

In summary, two conclusions from the studies on hepatic function were of particular interest. First, the data on preoperative hepatic function gave no indication as to the mildness or severity of the postoperative course. Second, in the postoperative period an increase in the incidence and the degree of impaired hepatic function and an increase in hyperthyroid reactions were found, but there was no evidence to show that one was the cause of the other. A third factor could be responsible for both.

EPINEPHRINE

In this country the relationship between the nervous system, the adrenals and the thyroid gland has repeatedly been emphasized. Crile²⁸ has on many occasions pointed out the interdependence of these structures and bases his treatment of hyperthyroidism on the concept that it is a disorder of the entire kinetic system. In a recent article on postoperative hyperthyroid reactions, Pemberton¹ presented the following two theories as to cause: (1) sudden increase in amount of thyroid secretion (either normal or abnormal) and (2) hypersecretion of epinephrine. In the discussion of these theories the evidence was much stronger for the latter. In 1914 Cannon²⁹ showed that pain and strong emotional factors stimulate the suprarenal medulla to greater activity. With Cattell³⁰ he showed that injections of epinephrine induce secretory activity of the thyroid gland. Levy³¹ added the fact that thyroid secretion sensitizes the sympathetic system to epinephrine. Guided by Levy's work, in 1918 Goetsch³² brought out a test for early hyperthyroidism, the significant finding being an increased response to injected epinephrine. Of particular significance in regard to the theory that excessive secretion of epinephrine causes thyroid crisis was the observation of Goetsch and Ritzmann³³ that the operative reaction is identical in nature with the preoperative responses of the same patient to a subcutaneous injection of epinephrine, the variation being only in degree.

From this discussion it is evident that a measurement of the epinephrine content of the blood of patients with hyperthyroidism would be of value. Such measurements were done in the early part of this century, and although the methods employed have been criticized the results are worthy of mention. Fraenkel³⁴ in 1909, using a rabbit uterus procedure, reported the finding of increased amounts of epinephrine in the blood of three patients who had exophthalmic goiter. Broking and Trendelenburg³⁵ in 1911, using a method dependent on the perfusion of the vascular system of frogs, reported increased epinephrine in four out of five cases studied.

In January 1936 we began to use the method developed by Whitehorn³⁶ for the estimation of epinephrine in venous blood. Two chemical principles are involved: (1) the use of silicic acid for the separation of epinephrine from other substances which might interfere with the test and (2) the reduction of arsenomolybdic acid by epinephrine, the resultant blue solution being read colorimetrically. The sensitivity of this test is indicated by Whitehorn's experiments, in which an average of 92 per cent of epinephrine added to blood was recovered and epinephrine detected when its concentration reached or exceeded 1 part in 50,000,000. This amount is believed to be about twenty times greater than the concentration in normal venous blood.³⁷

The test was performed on sixteen patients with hyperthyroidism, both before and after the operation. The result was negative in five and positive in eleven. In four of the latter thyroid crisis developed, two died preoperatively and one postoperatively. The most positive value obtained was for patient D H (chart 2), who had the most severe thyroid crisis seen during the past two years. The reaction became negative shortly after the crisis subsided.

In a consideration of these data there was much to be desired. The Whitehorn test, in the first place, is still an unproved method when one is dealing with disease conditions, and, secondly, it has never been checked against methods of biologic assay. In addition, the methods of biologic assay advocated at this time have not been used on patients showing severe postoperative hyperthyroid reactions. It seemed logical to carry out such studies.

Of the procedures for biologic assay available, the combination used by Stewart³⁸ and Rogoff³⁷ appeared to be most desirable.³⁹ This consists of an inhibition of the contractions of a rabbit intestinal strip and an augmentation of the contractions of the rabbit uterus. As far as is known, only epinephrine will produce these two effects, and the reaction is roughly quantitative.

In four patients with hyperthyroidism the Whitehorn test and the biologic assay⁴⁰ were employed. The following case was chosen for consideration.

CASE 4—J S, a man, aged 27, had the symptoms and signs of severe exophthalmic goiter six months prior to admission. The loss of weight was 40 pounds (18 Kg). An early basal

28 Crile G W. The Interdependence of the Thyroid Adrenals and Nervous System. *Am J Surg* 6:616 (May) 1929.

29 Cannon W B. The Emergency Function of the Adrenal Medulla in Pain and the Major Emotions. *Am J Physiol* 33:356 (Feb.) 1914.

30 Cannon W B and Cattell M K. Studies on the Conditions of Activity in Endocrine Glands. III. The Influence of the Adrenal Secretion on the Thyroid Gland. *Am J Physiol* 41:74 (July) 1916.

31 Levy R L. Studies on the Conditions of Activity in Endocrine Glands. IV. The Effect of Thyroid Secretion on the Pres or Action of Adrenin. *Am J Physiol* 41:492 (Oct.) 1916.

32 Goetsch Emil. Newer Methods in the Diagnosis of Thyroid Disorders. *Pathologic and Clinical New York State J Med* 18:259 (July) 1918.

33 Goetsch Emil and Ritzmann A J Jr. Thyroid Disorders. VI. The Suprarenal Factor in Reactions to Thyroidectomy. *Arch Surg* 29:492 (Sept.) 1934.

34 Fraenkel A. Ueber den Gehalt des Blutes an Adrenalin bei chronischer Nephritis und Morbus Basedown. *Arch f exper Path u Pharmacol* 60:395 (June) 1908/1909.

35 Broking E and Trendelenburg P. Adrenalin nachweis und Adrenalin gehalt des menschlichen Blutes. *Deutsches Arch f klin Med* 103:168 (June) 1911.

36 Whitehorn J C. A Chemical Method for Estimating Epinephrine in Blood. *J Biol Chem* 108:633 (March) 1935.

37 Rogoff J M (University of Chicago). Personal communication to the author.

38 Stewart G N. So-Called Biological Tests for Adrenalin in Blood with Some Observations on Arterial Hyperionus. *J Exper Med* 11:377 (Oct.) 1911.

39 Guidance was given by Dr J M Rogoff University of Chicago in the carrying out of the biologic assay methods.

40 Dr Carl Moyer performed the biologic assay determination.

metabolic rate was reported as + 105 per cent. The response to preparatory treatment was good, but multiple stage operations were considered advisable. A right hemithyroidectomy was done on May 25. Chart 3 shows the postoperative reactions of temperature and pulse and the results of the epinephrine determinations.

As can be seen in chart 3, the Whitehorn test, which was positive both preoperatively and on the first postoperative day, was negative on the third postoperative day. With the rabbit intestinal segment an epinephrine-like reaction was obtained preoperatively and on three occasions postoperatively. It was of interest that the peak of the postoperative hyperthyroid reaction was coincident with the greatest value obtained by biologic assay. The reaction of the intestinal segment obtained at this time, the first postoperative day, was similar to the effect of 1 part in 30,000,000 of epinephrine. This concentration is from ten to thirty times the normal and corresponds to such concentrations in systemic blood as might be obtained if all the epinephrine liberated from the adrenal glands by powerful stimulation of the

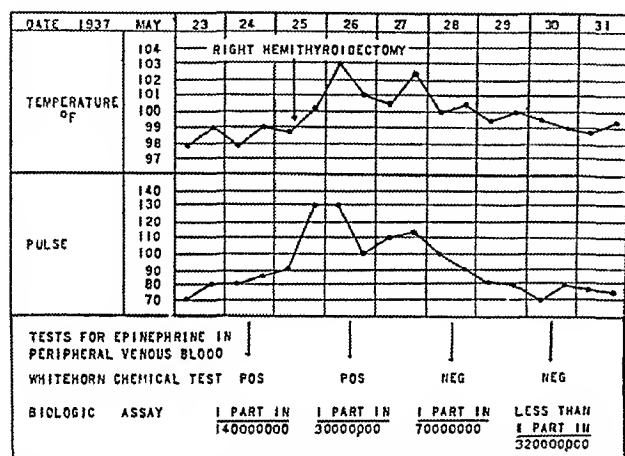


Chart 3 (case 4)—Data from tests for epinephrine in the peripheral venous blood of a patient with hyperthyroidism with special reference to the postoperative hyperthyroid reaction.

splanchnic nerves remained in the circulation.⁴¹ The results in the other three cases were essentially the same as in this one.

In relation to the possibility of increased amounts of epinephrine in the blood, two other observations on patients with postoperative hyperthyroid reactions are worthy of further thought.

1 Pulmonary Edema—During three typical examples of severe postoperative thyroid crisis observed during the past two years the raising of large amounts of frothy, slightly blood-tinged sputum was an alarming finding. Two of the patients died, and at the autopsy on one patient marked edema of the lungs, with confluent, acute, fibrinopurulent, lobular pneumonia was observed. A diffuse pneumonic process of varying degrees is mentioned among the postoperative complications by most authors, but pulmonary edema has received little attention. Patient D. H. (chart 2), the third patient in whom pulmonary edema was noted, recovered from this complication rather suddenly on the afternoon of the third day of her crisis (February 9) and was out of the crisis on the following morning. At this time (February 10) the chemical test for epinephrine, which previously had been positive, was found to be negative.

As mentioned before, Goetsch³³ has shown that all the common operative reactions in the patient with hyperthyroidism can be brought out by the administration of epinephrine hydrochloride to the same patient prior to the operation. Can excessive amounts of epinephrine be responsible for the pulmonary edema observed by us? The literature furnished significant data in this regard.

In 1902 Bouchard and Claude⁴² observed pulmonary edema and death in the normal rabbit after the intravenous injection of epinephrine. Auer and Gates⁴³ have published some exceptionally fine colored plates showing this phenomenon; they demonstrated that when the vagi are divided smaller doses of epinephrine are effective in producing the edema and that atropine then exerts a protective action. In the clinical literature, reports⁴⁴ were found of pulmonary edema occurring in the presence of chromaffin cell tumors, which are known to secrete epinephrine. Also, a fatality has been reported⁴⁵ due to the accidental administration of 75 cc of 1 to 1,000 epinephrine solution subcutaneously, death occurring four hours after the onset of acute pulmonary edema. This is a tremendous dose, but experimentally in rabbits it has been shown⁴⁶ that when administered subcutaneously large doses are necessary to produce this effect.

From references cited there is evidence for the belief that pulmonary edema seen in instances of thyroid crisis can be the result of increased amounts of circulating epinephrine. We consider that in the past we have overlooked this respiratory complication, in many instances attributing the cyanosis and the excessive mucus to bronchopneumonia and tracheitis.

2 Epinephrine Disturbing Liver Function—At this point it seemed logical to inquire whether the disturbance in hepatic function and the pathologic changes in the liver of patients with hyperthyroidism could be due to epinephrine. Besides the production of pulmonary edema already mentioned, early work with adrenal extract showed that it disturbed the carbohydrate metabolism of the liver⁴⁷ and that the liver was intimately concerned with destruction of epinephrine.⁴⁸ In 1934 Perazzo⁴⁹ demonstrated in dogs that moderate doses of epinephrine injected intravenously produce well advanced fatty degenerative changes. This pathologic process is essentially the major acute lesion observed by Weller¹ and Beaver and Pemberton¹⁸ in the liver of patients who died of hyperthyroidism.

COMMENT

From the several studies discussed in this paper, two observations merit comment.

1 Impairment of hepatic function was not found to be the cause of postoperative hyperthyroid reactions, but its presence to a considerable degree in the immediate

⁴² Bouchard C and Claude H. Recherches experimentales sur l'adrenaline. *Compt rend Acad d sc* 135: 928 (Dec) 1907.

⁴³ Auer J and Gates F L. Experiments on the Causation and Amelioration of Adrenalin Pulmonary Edema. *J Exper Med* 20: 791 (Aug) 1917.

⁴⁴ Collier F A, Field Henry Jr and Durant T M. Chromaffin Cell Tumor Causing Paroxysmal Hypertension Relieved by Operation. *Arch Surg* 28: 1136 (June) 1934.

⁴⁵ Wichels P and Lauber H. Ueber das Adrenalinum endem. *Klinische Beobachtungen und experimentelle Studien*. *Ztschr f klin Med* 119: 42 (Dec) 1931.

⁴⁶ Batelli F and Taramaso P. Toxicite de la substance active des capsules surrenales. *Compt rend Soc de biol* 54: 815 (June) 1907.

⁴⁷ Blum F. Ueber Nebennierendiabetes. *Deut ches Arch f klin Med* 71: 146 (Oct.) 1901.

⁴⁸ Athanasu and Langlois. Du role du foie dans la destruction de la substance active des capsules surrenales. *Compt rend Soc de biol* 4: 575 (June) 1897.

⁴⁹ Perazzo Giorgio. Lesioni istologiche da adrenalina del parenchima di alcuni organi interni. *Pathologica* 26: 745 (Nov) 1934.

⁴¹ Rogoff J M. Personal communication to the authors.

postoperative period was definitely shown. Since the protective action of carbohydrates on the liver has been definitely established, the occurrence of impaired hepatic function in the immediate postoperative period of patients operated on for hyperthyroidism is an excellent reason for the administration of dextrose solutions at this time. For most surgeons³⁰ this treatment is a matter of routine in the care of such patients, and from experience its value has been proved.

2. Concerning this preliminary report on the finding in the blood of patients with hyperthyroidism of increased amounts of a substance which yields biologic reactions similar to those of epinephrine, no positive identification of this substance as epinephrine can be made at this time. Confirmatory tests are now being carried out.

The occurrence of thyroid crisis has been definitely decreased by better preparation of the patients, by selective operative procedures and by adequate postoperative care. With further knowledge of the cause of thyroid crisis, specific measures may be possible to avoid this serious complication.

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ABSTRACT OF DISCUSSION

DR GEORGE CRILE JR., Cleveland. The development of the Whitehorn test for epinephrine opens a wide field for research. It will be interesting to see whether a positive test for epinephrine is a finding specific for patients in thyroid crisis. It is possible that the terminal phase of any condition associated with circulatory failure, pulmonary edema or anoxemia may call forth an emergency output of epinephrine. If this should prove to be the case, a positive epinephrine test might indicate the presence of severe anoxemia rather than a specific thyroid-adrenal relationship. Dr Crile Sr, Dr Dismore and I have recently studied 200 cases of hyperthyroidism. In this group there were four instances of liver failure. The onset of symptoms was usually on the third postoperative day, always well after the peak of the postoperative pulse and temperature reaction. The first indication of hepatic insufficiency was confusion or delirium, accompanied by an elevation of the icterus index to as high as 75, the average being 42. Three of the four patients who presented clinical evidence of liver failure were over 60 years of age, an observation that is consistent with Beaver and Pemberton's autopsy results. In their series, atrophy and cirrhosis of the liver was more marked in elderly patients with hyperthyroidism than in patients in the younger age groups. The figures of Dr Maddock and his co-workers also show a correlation between the diminution of liver function and the age of the patients. Thus the degree of hepatic impairment would appear to be related to the age of the patient as well as to the severity of the hyperthyroidism. I agree that a solution of dextrose given by the continuous intravenous drip method is of great value not only in the prevention and control of thyroid crisis but also in combating liver failure. But 5 liters of 5 per cent dextrose solution contains only 1,000 calories, and the caloric intake necessary to maintain weight in a patient with a basal metabolic rate of plus 100 per cent may be as high as 5,000 calories a day. When after operation such a patient stops eating, it is vital to restore the metabolic equilibrium by restoring the intake of food. If food is refused, forced feedings can be given through a nasal tube. I have seen delirium which did not respond to any other method of treatment clear up rapidly following restoration of caloric intake by high carbohydrate feedings given through a nasal tube.

DR JOHN PAUL NORTH, Philadelphia. The authors have made a distinct contribution in demonstrating an increase of

epinephrine in the blood in hyperthyroidism and this is further evidence of the close relationship between the thyroid and adrenal glands. The proof that this increased epinephrine is the cause of thyroid crisis requires more evidence than has been presented. The case in favor of epinephrine rests on laboratory tests the interpretation of which is no more certain than that of the liver function tests. These admittedly are not very satisfactory. The Whitehorn test has not been subjected to extensive clinical trial. Its originator confesses inherent difficulties which limit the accuracy of the method to dilutions in excess of one part of epinephrine in 50 million, yet in one of the cases just reported a positive Whitehorn test is recorded in which the corresponding biologic assay showed a dilution of one in 120 million. Obviously the concentrations of epinephrine encountered in human venous blood approach the range of probable error of the method itself. It is well known that anoxemia stimulates the production of epinephrine. Thus, if nitrous oxide or avertin with amylene hydrate was used in Dr Maddock's case, the associated anoxemia might well account for the postoperative disturbances shown. Any control of this anesthetic factor would be difficult, since even with local anesthesia the psychic stimulus of fright could operate to increase the content of epinephrine. It is difficult to accept the relationship between epinephrine and pulmonary edema. Freeman's studies on surgical shock indicate that the effect of increased production of epinephrine is dehydration. Congestion of the lung has been seen as a terminal development in thyroid crisis and it has appeared logical to explain it on the basis of cardiac failure. From the practical standpoint, genuine thyroid crisis is not encountered as frequently as a few years ago. The improvement can be attributed, as Dr Maddock and his co-workers have intimated, to various factors, the chief of which are surgery earlier in the course of the disease, careful preoperative preparation of the patient, and the administration during the immediate postoperative period of adequate amounts of fluid and dextrose. Six years ago I began giving to all severely toxic patients dextrose solution by continuous intravenous drip for several days after operation. In approximately 950 operations for toxic goiter at the Hospital of the University of Pennsylvania during these last six years, only two patients have developed crisis after operation and in one of these the dextrose routine was not followed. The benefits which patients obtain from this therapy are probably due to the provision of a readily available fuel and also to the correction of fluid balances. Accumulating evidence points to the fact that one does not restore the depleted glycogen content of the liver by simply administering dextrose, as it was originally believed that it was possible to do.

DR WILLARD BARTLETT JR., St. Louis. It may be recalled that last year before this section I reported the use of the continuous neutral bath for the treatment of thyroid crisis, thus, by providing the "engine" with a better "radiator," being able to separate the phenomena due to hypercombustion from those due to toxemia. The significant point is that some patients die in thyroid crisis even after an afebrile course in the neutral bath. A study of the variations in the blood amylase during the immediately postoperative phase discloses that the amylase drops sharply within eight hours of thyroidectomy for toxic goiter and stays at this low level for forty-eight hours, rising only slowly thereafter, the preoperative level may not have been regained at discharge on the fifth postoperative day. Enucleation of a nontoxic adenoma is not followed by any variation in the blood amylase. This quantitative method was developed by Somogyi and is considered to be the most delicate test of liver function that is available. Until evidence to the contrary is forthcoming, impaired liver function will have to be considered as responsible for some portion of the manifestations of thyroid crisis.

DR WALTER G. MADDOCK, Ann Arbor, Mich. Drs Crile, North and Bartlett have added to this interesting subject, and I wish to thank them for their discussion. Much more work will be necessary to establish the exact cause of thyroid crisis. I feel that I am just beginning on the question of epinephrine concentration being increased and I am looking forward with pleasure to further work on the same subject.

³⁰ North J P. Symposium on Thyroid Disease. The Use of Continuous Venoclysis of Glucose After Thyroid Operation. *Pennsylvania M J* 36:495 (April) 1933. Dismore R S and Crile G W Jr. The Significance and Treatment of Delirium or Confusion Following Thyroidectomy for Hyperthyroidism. *Cleveland Clin Quart* 4:103 (April) 1937.

THE TRAINING OF THE STUDENT IN WHAT IS INVOLVED IN ADE- QUATE MEDICAL CARE

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During recent years there has been a feeling on the part of many medical educators that there has developed too great a tendency in the undergraduate curriculum to stress disease rather than the patient suffering from disease.

Although the discontinuance of the preceptorship and the institutionalizing of medical education was an important and necessary development, it did tend to emphasize to the student the details of disease processes and to minimize a consideration of the patient as an individual. Students became inclined to view patients more or less abstractly in terms of specific diseases, e. g., a case of pneumonia or a case of mitral stenosis.

The recent rapid advances in the physical and chemical aspects of medicine with the development of a large number of technical procedures useful in both the diagnosis and the treatment of disease have tended to submerge further a consideration of the patient as an individual reacting to a myriad of conditions of which the disease itself is but a part.

The successful practice of medicine requires an appreciation of the influence that heredity, social and environmental factors and individual peculiarities exert on the course of illness. As stated by Dr. Longcope,¹ "There is no separation of man from his disease or of disease from man. It is the patient and not the typhoid bacillus that presents to us the disease typhoid fever, it is the violently disturbed reaction of the patient to the abnormal action of the thyroid gland, not thyroxine, that gives us Graves' disease, and it is the more or less successful efforts of the patient to overcome a stricture of the mitral orifice, not the stenosis itself, that produces the picture called heart disease."

It is undoubtedly true that most physicians who enter the field of general practice eventually have these truths impressed on them. However, the nature of medical practice, especially in the more metropolitan areas, is changing to such an extent that personal and environmental factors do not stand out in bold relief as they do in the more intimate relationships of the "old time family doctor."

The psychiatrists have incorporated in the undergraduate curriculums of many schools courses in psychobiology to emphasize the importance of personality in the development of mental diseases. Other clinical teachers have been thereby stimulated to stress a consideration of patients as individuals. With the development of medical social work, certain schools have also included in the curriculum seminars and conferences between medical social workers and students.² In a few instances, students have been required to visit the homes of patients.

Our object in this paper is to describe briefly a procedure with which we at Syracuse have been experimenting since 1930 in the hope that it would give our students a better point of view toward all the problems involved in adequate medical care. The program was supported by a grant from the Josiah Macy Jr. Foundation. The procedure we adopted was suggested by Dr. Ira Hiscock, who had followed a somewhat similar plan in teaching public health. Our program has involved placing of responsibility on each student for a complete study of at least one patient who has been assigned to him as a clinical clerk on the hospital wards.

At the beginning, the home visits connected with these studies were supervised by the hospital social worker. However, it was our experience that such supervision tended to routinize the work of the student and failed to develop initiative and the coordination that was essential to a satisfactory point of view toward the case as a whole. After several years of experimenting the program has developed until it is now conducted as follows. Each clinical clerk is assigned a patient for investigation. The patient selected is one whom he has studied in the hospital from the clinical point of view. An effort is made to avoid cases in which the diagnosis is doubtful and to select those cases which present individual and environmental problems. The selection is made by an instructor in medicine who is on active duty in the medical ward. He also follows and directs the investigation by the student. The instructor may be aided by the social worker in the selection of the cases, but the student does not consult the social worker before making his study of the case.

The instructor explains to the clinical clerks the significance of the investigations and outlines to them a general plan of procedure. The student then visits the patient's home, interviews the family, surveys the situation in general and drafts a rough report, giving the results of his investigation. The instructor reviews this report with the student and then goes with him to the home and familiarizes himself with the situation. He then discusses with the student the problems presented and, if necessary, makes suggestions for further investigation. On the completion of his study, the student prepares a report which includes a series of recommendations with regard to the adequate handling of all aspects of the case. He presents this report at one of the medical seminars, which are held weekly throughout the year. The seminar is conducted by the professor of medicine and attended by the professor of bacteriology and public health, the professor of psychiatry, the professor of sociology in the university, the social workers from the outpatient department and the hospital, the instructor in charge of the students' investigations, and from four to six students.

After the student has presented his report, the social workers are asked to comment on the case and to give any additional information they may have. We have found that a discussion of the case by the social worker means more to the student at the time of the seminar than it would if held before he has completed his own investigation. Each faculty member then discusses the situation from his own particular point of view and questions the student with regard to various aspects of the case. The attending students participate in the discussion.

The student is expected to follow his patient throughout the year and to file a supplementary report giving

From Syracuse University College of Medicine.

¹ Longcope, Warfield D. Methods in Medicine. Bull. Johns Hopkins Hosp. 30:4 (Jan.) 1932.

² Cohen, Ethel, and Derow, H. A. Teaching Medical Students Objectives for Care of Patients and Social Aspects of Illness. Arch. Int. Med. 56:351 (Aug.) 1935. Cannon, J. M. Teaching Medical Students the Social Implications of Illness. New England J. Med. 211:216 (Aug. 2) 1934.

the final status of the patient at the end of the year. Usually two reports are presented at each seminar meeting and the schedule is so arranged that each student attends four seminars and thus hears the presentation and discussion of seven cases other than his own.

A brief review of a few of the many situations and problems discussed may be of interest.

The first case reported last fall was that of a 14 year old girl who died within a few weeks of *Streptococcus viridans* endocarditis. This child was a member of an ignorant Polish family and for years had been known to have rheumatic heart disease. She had attended medical clinics in the city but, either because of a lack of knowledge of the situation at home or because of a lack of contact between the medical agencies concerned and the family, the little patient had been woefully neglected. She lived in a cold, dump house and her clothing was entirely inadequate for the rigors of the winters through which she lived. She was frequently chilled and cold at home. No attempts were made to restrict her activities. She went to school thinly clothed and walked through snow and slush in shabby shoes and sat for hours in school with cold, wet feet. Her teeth were neglected and abscesses developed. Obviously diseased tonsils were disregarded. Her diet was frugal. Doubtless the family was informed after medical examinations in school or in the clinic, that the patient should not run and play as other children, that she needed dental care, perhaps tonsillectomy, surely a better balanced diet and warmer clothing. But, because of a lack of intelligent contact with the family and, too, because of their ignorance, they were not made to understand the seriousness of the situation and the recommendations were not carried out and the neglect continued. With such conditions, the development of the endocarditis could almost have been predicted. This type of case provides a dramatic illustration of the importance of environment in the development of disease.

Another case was that of a woman of 38, admitted to the hospital because of having attempted suicide. Investigation revealed that she was a prostitute springing from a background in which were sprinkled insanity, immorality, alcoholism and criminal traits as far back as the grandparents. As a child, she was beaten and locked in closets. She attempted suicide first at the age of 14. She feared and hated her relatives. Sexual immorality began at 18. After her marriage at 19 she became alcoholic and left her husband after a short time. She had been a professional prostitute for about seven years. Yet this alcoholic, suicidal psychopath could not be called insane, so neither the Department of Mental Hygiene nor any other state or local agency had any provision for her but to allow her to continue her existence unchanged—a miserable, unhappy example of what poor, weak-minded degenerate families may produce if society refuses to help and guide them.

A somewhat more dramatic case illustrating that the responsibility of a physician does not end when he has made the diagnosis and instituted the proper treatment, was that of a middle-aged man who was found to have pernicious anemia. A correct diagnosis had been made and proper treatment instituted by a private physician. The patient had returned once or twice for observation and then failed to appear. When last seen by his physician, the anemia had been relieved

and the patient had no complaints. About three months later, however, the patient returned, a helpless cripple, markedly anemic and unable to walk because of advanced changes in the spinal cord. He had discontinued the treatment and, of course, his anemia had reappeared and, unfortunately, the spinal cord lesions had developed. It was thus evident that the physician's skill in diagnosis and his knowledge of therapeutics were wasted because he failed to ascertain why it was that his patient did not return. Our students are now being taught that the responsibilities of a physician make it necessary for him to ascertain that his patient is receiving proper medical attention before he allows him to be lost sight of. Some may object to this point of view and say that the physician is not responsible for what may happen to a patient who refuses to cooperate with the advice given, but if the physician has the best interests of his patient at heart he will reply to this objection by saying that lack of cooperation on the part of a patient merely increases the difficulty of the problem at hand, as such behavior is to be considered symptomatic of some mental disturbance or due to some environmental factors which the physician must search for and correct.

Other cases illustrate the influence of poverty, emotional conflicts and religion on the development and progress of disease. In some instances, psychoses or impending psychoses not recognized by the clinical studies in the hospital were brought to light by the student's investigations of the patient's life at home and in the community. Patients requiring continued medical care at home because of their inability, for various reasons, to attend medical clinics are frequently encountered.

Students are frequently brought into contact with various health, welfare and religious agencies and learn how they are prepared to assist the physician in the care of the patient. They also come to realize that the physician himself becomes a part of the patient's environment and that his attitude toward the patient is always important. He learns that he must study the individual with whom he deals, attempt to get his point of view, find out his understanding of his illness—what he may fear, what he may disregard—and gain his friendship and confidence. Only when a physician has done this and, in addition, has familiarized himself with the peculiarities of the environment and the other members of the family may he intelligently advise the patient and expect his advice to be heeded.

The professor of medicine who has been in charge of the seminars since their inception feels that they have developed into one of the most valuable exercises in the entire curriculum, involving as they do an integration of preventive medicine, psychiatry and the social aspects of medicine in the study of the individual patient. The professor of pediatrics was much impressed by this program and has for several years required similar home visits by students during the period of their clerkship in the pediatrics wards. He feels that these visits are of great teaching value and that they frequently result in an entirely changed point of view as to the proper handling of the case.

As a result of these experiences, our students now graduate with an appreciation of the many problems involved in the practice of medicine and they are also better prepared to assume intelligent leadership in connection with modern social trends as far as they affect adequate medical care.

THE INTRATHECAL USE OF PRONTOSIL SOLUBLE

REPORT OF A CASE OF TYPE III PNEUMOCOCCUS MENINGITIS AND SEPTICEMIA TREATED WITH PRONTOSIL SOLUBLE, WITH COMPLETE AUTOPSY REPORT

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Since the introduction of the original prontosil by Domagk¹ as a therapeutic agent against hemolytic streptococci in mice, its two derivatives prontosil soluble and sulfanilamide have been extensively used against a variety of infections in man.

Experimental evidence by Rosenthal,² by Cooper, Gross and Mellon³ and by Cooper and Gross⁴ show that sulfanilamide has distinctly therapeutic properties in rats and mice infected with the type III pneumococcus. Heintzelman, Hadley and Mellon⁵ reported a small series of nineteen cases of type III pneumococcus lobar pneumonia, which carries a high mortality in the Pittsburgh area. Of nine patients who received sulfanilamide, seven lived and two died, while of the remaining untreated patients eight died and two recovered. At the Meadowbrook Hospital⁶ a crisis was induced by sulfanilamide twenty-four hours after onset of a type III lobar pneumonia, which was contrary to our experience with the disease over a period of two winters since the establishment of the hospital.

Prontosil soluble given parenterally, intramuscularly or subcutaneously is rapidly absorbed. Long and Bliss⁷ noted its appearance in the urine within fifteen minutes after subcutaneous injection and discouraged its use intravenously both because it is unnecessary and because of its toxic effects. Colebrook and Kenny⁸ also advised its intramuscular or subcutaneous rather than its intravenous use.

The intrathecal use of prontosil soluble has received scant attention. Schwentker and his associates⁹ used prontosil soluble intrathecally in one of their cases of streptococcal meningitis with untoward effects, the temperature rising to over 106 F with irritation of the meninges and a marked cellular reaction. They advise the use of crystalline sulfanilamide 0.8 per cent in physiologic solution of sodium chloride for intrathecal use. If the crystalline compound cannot be obtained, they advise the use of prontosil soluble subcutaneously and sulfanilamide by mouth. The experience of

Schwentker with prontosil soluble was not borne out in a case of streptococcal meningitis treated at Meadowbrook Hospital, with recovery,¹⁰ when 60 cc of prontosil soluble was administered intrathecally in three divided doses of 20 cc each over a period of twenty-four hours. Within twenty-four hours the count dropped from 5,000 cells with 75 per cent polymorphonuclear leukocytes to 1,700 cells with 75 per cent polymorphonuclears, and twenty-four hours after that the count was 280 cells with only 32 per cent polymorphonuclears. Sulfanilamide was also given by mouth and prontosil soluble intramuscularly. In the case of type III pneumococcus meningitis and septicemia here reported, prontosil soluble was given intramuscularly and intrathecally.

REPORT OF CASE

A white woman, aged 53, in a good state of nutrition, was disoriented, irrational and uncooperative on admission. The history was obtained from her husband. For about ten days previous to admission the patient had had a moderate cold in the head. The day before admission the patient boarded a train for New York City 20 miles away and, while riding, suddenly became sick, complained of marked headache and malaise and vomited. She returned home unassisted and went to bed, complaining of a severe diffuse headache. She was oriented and cooperative all that night, but her husband noted "convulsive twitchings" of the extremities and face. She was seen by her physician, who prescribed palliative treatment and returned to see her the next morning. At this time he noted definite meningeal signs and disorientation and advised hospitalization.

The past history was essentially negative aside from an occasional discharging right ear.

Physical examination revealed a temperature of 104 F rectally, the pulse was 120 and the respiration rate 35. The pupils were round and equal. It was impossible to elicit extraocular movements. The ear drums were normal except for a scarred right drum with a small central perforation. No discharge was noted. The pharynx was normal. The neck was markedly rigid. The chest was clear and the heart normal. There were positive Kernig and Brudzinski signs but no Babinski reflex was obtained.

The urine was of good concentration, 1 plus albumin, and from 8 to 10 red blood cells and from 10 to 12 white blood cells were noted (catheterized specimen). The hemoglobin was 72 per cent, leukocytes 18,500, polymorphonuclears 85 per cent and lymphocytes 15 per cent. The Wassermann and Kahn reactions were negative.

A spinal tap revealed thick greenish pus, which flowed fairly easily and separated into two layers almost immediately in the test tube. Because of the character of the fluid, specific treatment was withheld until the fluid was examined. A smear revealed many gram positive diplococci, which proved to be type III pneumococci. The cell count was over 18,000, with 99 per cent polymorphonuclear leukocytes. The spinal canal was again tapped and drained and 20 cc of prontosil solution 2.5 per cent was instilled, and 20 cc was given intramuscularly. Six hours later a spinal tap was done for drainage. Dr. Jasper of the ear, nose and throat service was called in consultation. His opinion was that the meningitis was probably secondary to infection of the ethmoid and sphenoid sinuses in view of the history of infection of the upper respiratory tract preceding the present illness. Roentgenograms of the skull and sinuses revealed marked ethmoiditis, chronic maxillary and frontal sinusitis and an enlarged sella turcica, with erosion of the floor and posterior clinoid process. Because of the patient's desperate condition, drainage of the ethmoid and sphenoid sinuses was advised. A submucous resection, bilateral middle turbinectomy and opening of the sinuses were performed. The patient's condition remained unchanged.

Later that evening a cisternal tap was done and 65 cc of fluid the color of prontosil was removed. Twenty cc of

From the Medical Service of Dr. Ernest Dickey.
The prontosil soluble solution used in this case is the solution marketed as "Prontosil Solution 2.5 per cent" by the Winthrop Chemical Company. The term prontosil has regrettably been used in the literature for a number of related substances. To avoid confusion the term prontosil used in this paper refers to prontosil solution 2.5 per cent which according to the label is disodium 4-sulfamido phenyl 2-azo 7-acetyl amino 1-hydroxynaphthalene 3,6-disulfonate.

¹ Domagk, Gerhard. *Deutsche med. Wchnschr.* 61: 230 (Feb. 15) 1935.

² Rosenthal, S. M. *Pub. Health Rep.* 52: 48 (Jan. 8) 1937.

³ Cooper, F. B., Gross, Paul and Mellon, R. R. *Action of Sulfanilamide on Type III Pneumococcus Infections in Mice*. *Proc. Soc. Exper. Biol. & Med.* 36: 143 (March) 1937.

⁴ Gross, Paul and Cooper, F. B. *Efficacy of Sulfanilamide in Experimental Type III Pneumococcus Pneumonia in Rats*. *Proc. Soc. Exper. Biol. & Med.* 36: 225 (March) 1937.

⁵ Heintzelman, J. H. L., Hadley, P. B. and Mellon, R. R. *The Use of Sulfanilamide in Type III Pneumococcus Pneumonia*. *Am. J. M. Sc.* 193: 759 (June) 1937.

⁶ Millett, Joseph. *The Action of Sulfanilamide in a Case of Type III Pneumococcus Pneumonia*. *New York State J. Med.* 37: 1743 (Oct. 15) 1937.

⁷ Long, P. H. and Bliss, Eleanor A. *Sulfanilamide and Its Derivatives*. *J. A. M. A.* 108: 32 (Jan. 2) 1937.

⁸ Colebrook, Leonard and Kenny, Neave. *Treatment of Human Puerperal Infections and of Experimental Infections in Mice with Prontosil*. *Lancet* 1: 1279 (June 6) 1936.

⁹ Schwentker, F. F., Clason, F. P., Morgan, W. A., Lindsay, J. W. and Long, P. H. *Bull. Johns Hopkins Hosp.* 60: 297 (April) 1937.

¹⁰ Millett, Joseph. *Hemolytic Streptococcus Meningitis. Report of a Case Treated with Sulfanilamide and Prontosil Soluble Intramuscularly and Intrathecally with Recovery*. *New England J. Med.* 217: 556 (Sept. 30) 1937.

prontosil solution was injected intrathecally in the lumbar region and 20 cc was given intramuscularly. At 2:30 a.m. the spinal tap was repeated and 20 cc of the prontosil was given intrathecally and intramuscularly again. The patient's condition was extremely poor. At 10 o'clock the temperature rose to 106.4 F and while a spinal tap was being performed the patient died, twenty hours after admission.

Culture of the blood taken on admission was reported to have too many colonies of type III pneumococci to count. Culture of the spinal fluid (initial tap) contained numerous type III pneumococci. The next day the culture of the spinal fluid, which was made from the spinal fluid taken at the last tap, was reported to have only a scant growth of pneumococci.

Permission for complete necropsy was obtained.

The entire body was observed to have a pinkish hue. When the skull cap was removed the dura was found to be homogeneously stained red. When the dura was removed the entire brain and leptomeninges were found to be stained in the same manner. The brain was removed in the usual manner and the entire base was found to be, as far as the naked eye could tell, entirely free from pus. The most remarkable finding was a large pituitary tumor, which was quite soft and which oozed pus on attempted removal. The petrous portion of the temporals was normal and the ethmoidal and sphenoidal sinuses were found to be filled with a small amount of postoperative blood. Microscopic examination of the organs revealed nothing of any moment that could not be attributed to the infection. There was no evidence of what might be considered chemical irritation of the brain cortex, and the leptomeninges showed a moderate degree of inflammation.

COMMENT

This patient died of an overwhelming infection of the type III pneumococcus. There is some experimental and clinical evidence which, although meager, points to the fact that sulfanilamide has some therapeutic action against the type III pneumococcus. The initial spinal tap in this case contained an abundance of type III pneumococci, the pus was fairly thick and greenish and the cell count was high, yet a culture taken after the administration of 60 cc of prontosil soluble intrathecally revealed only a scant growth of the organism. Unfortunately no cell count was made on this specimen.

The necropsy revealed that prontosil soluble administered intrathecally diffuses generally throughout the central nervous system with apparent ease and a minimum of irritation. It does not affect subsequent drainage and mixes intimately with the spinal fluid.

Because of the condition of this patient, sulfanilamide in tablet form was not given. The question was brought up as to whether or not prontosil soluble injected intramuscularly had any effect on sterilizing the spinal fluid. In order to find out whether there was any diffusion of the dye into the spinal canal, the following experiment was performed on an adult male volunteer.

At 2:30 p.m. 20 cc of prontosil soluble was injected intramuscularly into the buttock. In fifteen minutes the urine excreted was colored red. One-half hour after the injection a needle was inserted into the spinal canal and varying amounts of fluid were withdrawn every fifteen minutes. At 3:30 20 cc more of prontosil soluble was injected intramuscularly. By 4:30 about 60 cc of colorless, unstained spinal fluid had been removed. The needle was withdrawn and reinserted at 7:30, but the fluid was still colorless, although the patient had assumed a faint but definitely pink color throughout.

No chemical or bacteriologic studies were made on the specimen of spinal fluid to observe whether or not the fluid contained sulfonamide radicals or was bactericidal. It is interesting to speculate why the glomerulus, but not the choroid plexus, will excrete the dye so quickly.

SUMMARY

1 Prontosil soluble has been used intrathecally with marked bactericidal effect on type III pneumococcus meningitis in a patient who died of type III pneumococcus bacteremia.

2 Postmortem examination of the brain both grossly and microscopically revealed no apparent chemical injury due to the drug.

3 Because of its proved diffusibility throughout the central nervous system, prontosil soluble is recommended for intrathecal medication, augmented by the oral use of sulfanilamide, in those meningeal infections which have been shown to respond to these compounds.

Clinical Notes, Suggestions and New Instruments

STREPTOCOCCIC BACTEREMIA AND APPARENT THROMBOSIS OF THE CAVERNOUS SINUSES WITH RECOVERY

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In recent medical literature there have been increasingly frequent reports of the successful care of patients afflicted with infections formerly regarded as almost certainly fatal. So far as we are aware, however, recovery of a patient with bacteremia accompanied by evidence of obstruction in the cavernous sinuses still remains a medical rarity. Cavenagh¹ was able to find only seven reported recoveries from acute thrombosis of the cavernous sinus. Three patients recovered after surgical drainage of the sinus and of these only one had a positive blood culture (*Staphylococcus aureus*). Four patients recovered after anti-infective therapy. Three of these cases were due to *Staphylococcus aureus*, and this organism was recovered from the blood stream in two of the patients. One of these patients with bacteremia received only transfusions. The other two patients were treated with bacteriophage. The fourth patient in this group given anti-infective therapy appears not to have had a positive blood culture. He was given polyvalent anti-streptococcus serum intravenously. Cavenagh found also a record of one instance (Seale's case) of spontaneous recovery in an African native without bacteriologic study or specific treatment.

Grove² reports an instance of thrombosis of the cavernous sinus of septic origin, after operation on the mastoid. The patient recovered. The author expressed the opinion that the thrombosis in this case occurred in a retrograde manner from the lateral sinus or from one of the petrosal sinuses and that the thrombus in the cavernous sinus itself was sterile. He was unable to conceive of recovery taking place when the thrombus within the cavernous sinus itself was infected. Apparently there was not a bacteremia in this case. Two other recoveries reported by this author were evidently examples of aseptic thrombosis of the cavernous sinus following severe trauma. Grove concludes that in the septic types in which the thrombosis or thrombophlebitis reaches the cavernous sinus by way of its afferent vessels the mortality is practically 100 per cent.

The case about to be discussed presented roentgenologic evidence of pansinusitis, a positive blood culture, severe cyanosis of the face, enormous engorgement of the veins of the forehead and eyelids, marked chemosis of the conjunctivae including the right cornea and proptosis on both sides but especially marked on the right. A clinical diagnosis of septic

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¹ Cavenagh, J. B. Cavernous Sinus Thrombosis. A Study of the Cases of Recovery. *Brit. M. J.* 1:195-1199 (June 13) 1936.

² Grove, W. E. Septic and Aseptic Types of Thrombosis of the Cavernous Sinus. Report of Cases. *Arch. Otolaryng.* 21:29-50 (July) 1936.

thrombosis of the cavernous sinuses was made. The principal evidence against this diagnosis is found in the outcome of the disease.

REPORT OF CASE

K. C., a white woman, aged 40, a housewife, admitted to the hospital April 15, 1937, complained of fever, vaginal bleeding and swelling of the face of three days' duration. Marked swelling of the left eyelid began April 13 and similar swelling of the right eyelid April 14. A severe laryngitis had been present from April 8 to April 15. On admission the forehead, the malar regions, the bridge of the nose and the left side of the face and neck were red, swollen, tender and hot. The left eye was swollen shut. The right eye was two thirds closed and the eyeball protruded. Vaginal bleeding was moderate. Examination of the lungs was negative. The patient could speak only in a whisper and there was some mental confusion, apparently febrile. The temperature on admission was 102 F., pulse 78, respiration rate 24. X-ray examination, April 16, by Dr. William H. Meyer revealed veiling of both antrums and the ethmoid and sphenoidal sinuses, and he made a diagnosis of pansinusitis. Blood culture taken April 16 yielded positive growth of hemolytic streptococci both in broth flasks and in the agar plates. April 16 the right eye closed entirely. Mental confusion increased, with periods of delirium

only partly translucent. The eyeball was displaced forward. During a lucid interval the patient evidently could distinguish light and shadow with this eye but she could not count fingers. The left eye was in general similar but here the cornea remained clear with a puffy scleral conjunctiva elevated all about its margin. The patient could count fingers with this eye when it was held open for her. At this time the diagnosis was septic thrombosis of the cavernous sinus, bilateral, more severe on the right side, nasal pansinusitis, streptococcal bacteremia, early pneumonia of the right lower lobe, cyanosis in part due to alteration of blood by sulfanilamide. An unfavorable prognosis was given to the family.

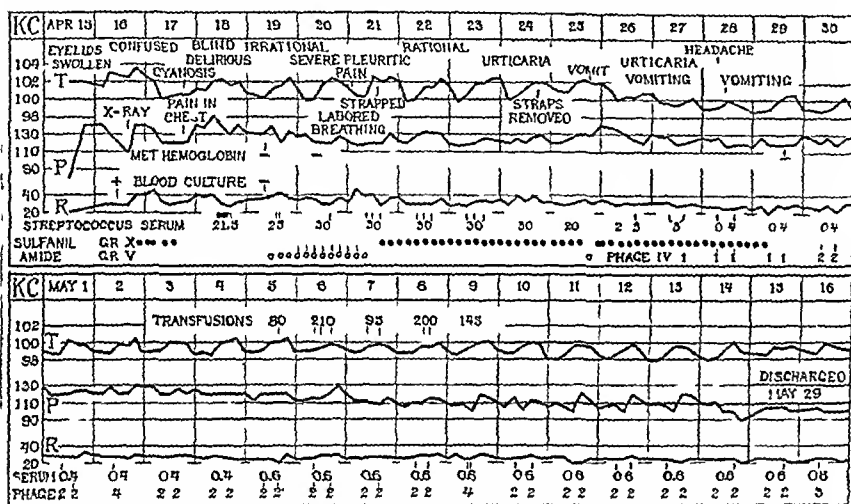
Antistreptococcus serum,³ 0.05 cc, was injected into the skin of the left forearm at 11 06 a. m. and 1 cc diluted with an equal volume of saline solution was injected subcutaneously. A second subcutaneous dose of 15 cc of serum was given at 11 25. The next dose, 1 cc of serum plus 1 cc of saline solution, was given into the triceps muscle at 11 45, and at 12 15 noon another intramuscular injection containing 15 cc of serum was given. At 12 35 the first intravenous dose was given, 0.05 cc of serum diluted with 0.95 cc of saline solution, and this was followed by increasing amounts of serum intravenously, 0.15 cc at 1 17 p. m., 0.3 cc at 1 35, 0.5 cc at 2 05, 1.5 cc at 2 43, 2.5 cc at 3 10, 5 cc at 3 47 and 6.5 cc at 4 13,

making a total of 21.5 cc of streptococcus serum for the day. In each instance the serum was suitably diluted with salt solution so as to be injected through a fine needle, gauge 27, for the intravenous doses. At 3 50 p. m. the patient was able to count fingers with the right eye when it was held open by the examiner.

Monday, April 19, the patient seemed much brighter and was inclined to chat cheerfully with the nurse. At 8 30 a. m. she could see clearly with either eye. At 9 20 a. blood culture was taken, which remained sterile. A bedside spectroscopic examination of the blood at this time was negative for methemoglobin and on this account, even though the patient was still very cyanotic, we felt that there was still enough functioning hemoglobin to provide a margin of safety permitting the administration of further sulfanilamide in 5 grain doses every four hours. April 19 a total amount of 25 cc of streptococcus serum was given in three intravenous injections and on subsequent days 30 cc. a day in three intravenous injections until April 25, when the amount was reduced as shown in the accompanying chart. All serum was given intravenously after the first day, April 18.

Pain in the right thorax became very severe April 21 and the respiratory rate reached 46 per minute. A distinct pleuritic friction sound could be heard below the breast in the anterior axillary line. This side was therefore taped and the adhesive strips were left on until April 24, at which time the pleuritic pain had disappeared, apparently without any marked effusion. The dose of sulfanilamide by mouth was increased to 10 grains every four hours April 21. The patient rebelled against this, ascribing to it her nausea and vomiting, and April 25 she took only half the dose at 6 15 p. m. The sulfanilamide was discontinued entirely April 29. The patient was still very cyanotic, although it was impossible to detect signs of pleural effusion or of pneumonic consolidation. The respiration rate continued to be about 30 per minute. A spectroscopic test of the blood was negative. After this drug was stopped the color of the patient gradually changed so that on May 3 she presented the skin and pink mucous membranes of a pronounced blonde. The nausea also disappeared. Untoward effect of the serum was evidenced by urticaria April 23, becoming more severe April 26. The dose of serum was reduced as shown in the chart.

3 The polyvalent concentrated antistreptococcus serum biologic no. 102 2005 of Parke, Davis & Co. was employed throughout for this patient.



Abridged clinical record of K. C. a white woman aged 40. Temperature, pulse and respiration rate are shown by the graphs. April 16, x-ray examination showed pansinusitis. Blood culture taken on this day yielded positive growth of hemolytic streptococcus. Sulfanilamide 10 grains every four hours by mouth was started that evening. It was discontinued April 17 given again in 5 grain doses beginning April 19 and increased to 10 grain doses April 21 and finally discontinued April 29. Streptococcus serum was given in multiple doses April 18 and thereafter every day until discharge from the hospital. Specific streptococcus bacteriophage in the asparagin medium was given intravenously April 27 and continued until discharge. Fractional transfusions were given May 5 to 9. Very marked cyanosis persisted until April 30 when it rapidly disappeared. Spectroscopic examination of the blood for methemoglobin however was negative April 19, 20 and 29.

Sulfanilamide, 10 grains (0.65 Gm.) every four hours by mouth, was started at 9 30 p. m. Friday April 16. Dyspnea and cyanosis increased progressively. April 17 the patient refused to take any more sulfanilamide because of nausea. Paroxysmal pain in the right thorax and coughing spells associated with severe cyanosis, as well as a moderate persistent cyanosis, were now present, and there was distressing pain and marked tenderness of the entire right upper extremity. During the night of April 17 she was delirious and quite noisy until the condition was controlled by hypodermic medication.

Sunday morning, April 18, her condition appeared desperate. There was very marked cyanosis and edema of the forehead, eyelids and upper part of the face and a less marked general cyanosis. The patient could not open her eyes. On the edematous upper lids the distended veins stood out as tortuous ridges from 2 to 3 mm in diameter. On the swollen forehead distended tortuous veins radiated upward from the inner angles of the eyes, and along the borders of these engorged veins were numerous minute capillary hemorrhages in the skin. The patient was a natural blonde with light auburn hair, but her facial skin was a blue gray. When the upper right eyelid was raised by the examiner, the conjunctiva was everywhere thickened by translucent edema and the cornea was irregularly thickened and

Meanwhile the efforts directed to the preparation of a specific bacteriophage had succeeded in the production of a lytic filtrate capable of causing satisfactory lysis of the patient's streptococcus in the test tube. This preparation was given by intravenous injection, beginning April 27 and continued as shown in the chart.

Continued low fever and a dull headache in the right frontal region made us fearful of a persistent intracranial complication. However, the headache disappeared. The dilated veins on the forehead and on the eyelids gradually returned to normal. Small hemorrhagic spots persisted along the courses of the veins on the forehead for a time, but these also had disappeared by May 15. The administration of blood from May 5 to 9 inclusive seemed to help the gain in strength. The patient was up and about after May 15 and was discharged from the hospital May 29. Because of the fact that the rectal temperature still continued to reach from 99.4 to 99.8 F each day, she was advised to continue temperature observations at home. Reports indicate that a day of unusual effort is followed by a rise in temperature to 99.8 or 100 F, although she feels quite well in other respects.

In reporting this case we are well aware that we are not offering critical evidence to aid in deciding an argument about the therapeutic efficiency of the sulfonamides of streptococcus serum or of streptococcus bacteriophage and we would disclaim any immediate interest in exploiting any of these agents. Rather, it is our intention and our hope that this report may bring some encouragement and perhaps assistance to the conscientious physician confronted with the problem of caring for a patient desperately ill with streptococcal bacteremia and evidence of obstruction in the cavernous sinuses.

303 East Twentieth Street

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONTRIBUTING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

PAUL NICHOLAS LEECH, Secretary

GITALIN (AMORPHOUS)—A glucosidal constituent of *Digitalis purpurea* Linne prepared according to the method of Kraft. It is standardized by the intravenous cat method of Hatcher and Brody (*Am J Pharm* 82:360, 1910) and its potency adjusted to an M. L. D. of 0.8 mg per kilogram of body weight.

Actions and Uses—The same as those of digitalis.

Dosage—Full digitalis effects are usually obtained after a total dosage of $\frac{1}{40}$ to $\frac{1}{20}$ grain, or from five to eight tablets. These effects may be obtained by the administration of two to three tablets per day for three or four days. The same precautions should be taken with gitalin as with any digitalis preparation or digitaloid drug. Should toxic symptoms, such as nausea or vomiting occur during the course of digitalization administration of the drug should be discontinued. After the desired clinical effects have been induced, the patient may be placed on a maintenance dose of $\frac{1}{240}$ to $\frac{1}{40}$ gram (one-third to one tablet) daily. The amount varies according to the individual requirements of the patient. Gitalin (amorphous) is less cumulative than digitoxin but more so than ouabain and most tinctures of digitalis. While the biologic cat unit has been determined to be 0.8 mg ($\frac{1}{40}$ grain) per kilogram of body weight, gitalin (amorphous) apparently gives good clinical results in amounts ranging from one-third to one-half the dose calculated on this basis.

Manufactured by Rare Chemicals Inc., Nepera Park, N. Y. No U. S. patent or trademark.

Tablets Gitalin (Amorphous) 0.8 mg ($\frac{1}{40}$ grain). Each tablet is scored into segments of $\frac{1}{40}$ grain for convenience in regulation of the daily maintenance dose.

Dried and ground leaves of *Digitalis purpurea* Linne are extracted with cold distilled water. This aqueous infusion is then treated with basic lead acetate and the lead subsequently removed by precipitation with sodium sulfate. The resulting filtrate is agitated with chloroform and allowed to separate. From the chloroform extract the gitalin

(amorphous) substance is precipitated by means of petroleum ether. The precipitate is subjected to further purification and finally dried in vacuo. The entire process of extraction and purification is conducted without the aid of heat.

Gitalin (amorphous) is a white or slightly buff colored amorphous powder which is readily soluble in chloroform, ether, acetone and alcohol and is slowly soluble in 600 parts of cold water. It is insoluble in petroleum ether and carbon disulfide. Its aqueous solution is neutral to litmus and possesses an intensely bitter taste. It has no sharp melting point but undergoes some decomposition when heated to 110 C and becomes fluid as the temperature is raised to 150 C. When its aqueous solution is boiled gitalin (amorphous) is converted into anhydrogitalin with a subsequent loss of about 30 per cent in potency.

Dissolve 10 mg of gitalin (amorphous) in 3 cc of glacial acetic acid in a narrow test tube and add to this one drop of 5 per cent ferric chloride solution. Underlay this solution with concentrated sulfuric acid. A brownish red zone appears at the point of contact. The upper acetic acid layer assumes a bluish green color gradually changing to indigo blue. Repeat the test without the addition of ferric chloride. A brown zone appears at the point of contact and the upper acetic acid layer remains green. Concentrated sulfuric acid containing 10 mg of gitalin (amorphous) and a trace of ferric chloride produces a brown color gradually changing to red and finally to violet. When an aqueous solution of gitalin (amorphous) is heated for one hour at 100 C its potency is reduced 30 per cent. This latter drop is a characteristic feature of gitalin (amorphous) and is due to the conversion of gitalin into anhydrogitalin. It does not occur with digitalein or digitoxin.

SILVER PICRATE-WYETH'S (See *THE JOURNAL*, July 3, 1937, p. 29, Supplement to New and Nonofficial Remedies, 1937, p. 16).

The following dosage form has been accepted:

Silver Picrate Liquid Suppositories 1 grain (infant size) Silver picrate N. N. R. in a boroglyceride gelatin base.

STAPHYLOCOCCUS TOXOID (See New and Nonofficial Remedies, 1937, p. 405).

E. R. Squibb & Sons, New York.

Staphylococcus Toxoid Squibb—Prepared by growing cultures of *Staphylococcus albus* and *Staphylococcus aureus* in semisynthetic mediums for forty-eight hours at 37 C in a special container containing 80 per cent carbon dioxide and 20 per cent oxygen. The toxin is detoxified by treating with 0.3 per cent solution of formaldehyde. U. S. P. and held at 37 C until 0.2 cc causes no necrosis when injected intradermally into rabbits. Merthiolate 1:10,000 is added. The finished material is passed through a Berkefeld filter and tests according to the regulations of the National Institute of Health are made to determine sterility. In addition potency and safety tests are made. George F. Leonard and August Holm (*J. Immunol.* 29:209 [Sept.] 1935) give a full description of the process of preparation and testing. The product is tested for sterility by planting in appropriate mediums according to the regulations of the U. S. Public Health Service for testing the sterility of biologic products. Safety tests are made by injecting 5 cc subcutaneously into guinea pigs and 0.5 cc intraperitoneally into white mice. The antigenicity of staphylococcus toxoid is determined by injecting 1 cc of toxoid per kilogram of rabbit intravenously into three rabbits and the resulting serum is tested at the end of one and two weeks for its content of staphylococcus antitoxin. No staphylococcus toxoid is used which in doses of 0.2 cc or less of the undiluted material will cause necrosis when injected undiluted into rabbits. The toxin is titrated to determine its dermonecrotic activity and also its actual killing power in rabbits.

Staphylococcus toxoid Squibb is marketed in packages of one 5 cc rubber capped vial each cubic centimeter containing the toxoid derived from at least 1,000 necrotizing doses of toxin.

SCARLET RED SULFONATE (See New and Nonofficial Remedies, 1937, p. 196).

Scarlet Red Sulfonate—"National"—A brand of scarlet red sulfonate N. N. R.

Manufactured by The National Aniline & Chemical Co. Inc. New York. No U. S. patent or trademark.

LIVER EXTRACT-ARMOUR—A yellowish granular powder containing a water-soluble fraction extracted from fresh mammalian liver. The daily oral administration of 14 Gm (three vials) has been found to produce the standard reticulocyte response as defined by the Council when assayed in cases of pernicious anemia.

Actions and Uses—Liver extract-Armour is proposed for use in the treatment of pernicious anemia. See general article Liver and Stomach Preparations, New and Nonofficial Remedies, 1937, p. 309.

Dosage—Liver extract-Armour is administered orally. The average daily dose during relapse is three teaspoonfuls (or three vials). In severe and complicated cases, larger doses may be required.

Manufactured by Armour and Company, Chicago. No U. S. patent or trademark.

Liver extract-Armour is made by the process developed by Dr. K. K. Koeber and his co-workers Drs. M. T. Hanke and Siegfried Maurer in the laboratory of the Ohio State Sprague Memorial Institute at the University of Chicago. Fresh livers still retaining the animal heat are finely minced and macerated with three volumes of water. The coagulable proteins are removed by heat and the liquid is condensed at low temperature and negative pressure. The resulting extract is treated with hot 70 per cent alcohol under a reflux condenser and the soluble fraction separated by filtration. The clear filtrate is evaporated to dryness in vacuo and the residual extract dried and powdered.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, DECEMBER 25, 1937

WORLD HEALTH AND THE LEAGUE OF NATIONS

The menace to health and the danger from epidemics in war-torn China have already given much concern to health authorities throughout the world. Thus the Assembly of the League of Nations has voted two million Swiss francs to assist China in dealing with its health problem. October 14, according to a press release, the Subcommittee for Technical Cooperation with China was given a description of the present epidemic situation in that country. With regard to cholera, the report states, measures now in force, plus the onset of the cold season, justify the hope that a large-scale epidemic will not break out this year. There is, however, grave reason to fear a fresh pandemic during the spring and summer of 1938. The report continues:

It would not seem that the present disturbances are likely directly to influence the incidence of plague. Nevertheless, indirect repercussions, which might become serious internationally as well as nationally, are to be expected if the disturbances cause a breakdown in quarantine services and thus lead to the transmission of plague infection by sea.

If military operations should extend—particularly during the winter—to the Shansi-Shensi region, where plague is endemic, an outbreak of pneumonic plague might be feared as a dangerous contingency.

Any movement of refugees, carrying lice and the plague virus, toward the central, and more particularly the southern, parts of China, where the population is now immunized against typhus, is likely to lead to epidemics, at any rate on a local scale.

Any considerable shift of population may cause outbreaks of smallpox, by spreading infection among the rural populations, who include a high percentage of receptive individuals.

The difficulties of supplying clean water, both to troops on the march and to refugees outside camps are also clearly capable of causing a considerable increase in infections of the digestive tract, of the typhoid and dysentery types—the latter more especially during the hot season.

Meningitis is obviously more to be feared among the troops, by reason of overcrowding and fatigue among soldiers who are generally highly vulnerable to infection. Preventive measures are particularly difficult to take in times of war.

The situation as regards diphtheria and scarlet fever is very similar, and the same factors are likely to facilitate the spread of these diseases.

The diseases enumerated above do not exhaust the list of possible epidemics which may result from the military opera-

tions in China or from their repercussions. Mention may also be made of the probable increase in the incidence of venereal disease and the possible appearance of malaria epidemics, if troops or groups of refugees not previously immunized by infection remain in malarial districts during the hot season.

It is hardly necessary to refer to the increase in infant mortality and tuberculosis, which are inevitable consequences of the distress caused by war, even when actual famine does not occur.

The United States Public Health Service has also taken official notice of some of the problems raised by the Far Eastern carnage. In *Public Health Reports* for September 24 is a brief discussion of cholera in China.¹ The chief quarantine officer detailed to this duty by the United States Public Health Service in the Philippine Islands has directed all quarantine officers to carry out careful inspection of ships, passengers and crew from infected or suspected ports, including examination for carriers. It is believed, however, that the seaports on the western coast of the United States are not likely to become infected since the incubation period of cholera is only five days, and outbreaks on shipboard will occur before these ships reach any United States seaport. Air travelers from the Far East will also have completed the incubation period by the time they reach San Francisco, but those stopping off en route will be held at stopover points to complete the incubation period.

The importance of investigations and technical advice from the Health Organisation of the League of Nations to countries in sanitary difficulties has already been demonstrated several times. Thus the Report on the Health Mission in Spain,² of Dec. 28, 1936, to Jan. 15, 1937, while not disclosing as serious a sanitary situation as may be expected in China, was nevertheless a valuable review of the sanitary, housing and feeding problems associated with the civil war in Spain. MacKenzie³ has recently pointed out that there are four main activities of the League Health Organisation. These may be classified as the commissions and committees of experts, collaboration with various governments, the collection of information from various countries with regard to disease incidence, and medical educational work, including collective study tours, individual study tours and international courses in public health subjects. The functions of some of the commissions, notably those on malaria, leprosy and cancer, are quite generally known. The commissions on permanent standards, maternal welfare, medical education, treatment of rabies and others are also making important contributions. The Epidemiological Intelligence Service first began work in 1921. The information received is included in a bulletin which is telegraphed weekly, in a special code to the Geneva center and to certain eastern health authorities. Not the least important of the functions—

1 Cholera in China. *Pub. Health Rep.* 52: 1341 (Sept. 24) 1937.
2 Bulletin of the Health Organisation. League of Nations. Geneva G. 56 (Feb.) 1937.
3 MacKenzie, Melville D. Some Aspects of the Health Organisation of the League of Nations, *J. Malary Branch Brit. M. A.* 1: 6 (Jan.) 1937.

of the Health Organisation is the promotion of conferences on special subjects. As MacKenzie says, the rapidity of modern transport and the greater amount of traveling by all classes have increased the need for international collaboration, if the fullest possible advantage is to be taken of the available knowledge and experience in the control of ill health.

The immunologist Thorvald Madsen⁴ in the Harvey Lecture, February 18, spoke convincingly of the value of the scientific work of the Health Organisation. One of the difficulties in interpreting the public health statistics which the organization has attempted to collect and collate has been the establishment of uniform figures. Much must be done to make the data comparable on such questions as stillbirth, population estimates, and the notification of joint causes of death. In order to achieve the necessary uniformity and comparability, it was necessary to create several commissions of statistical experts who have studied the questions and made definite proposals to the health administration. The ultimate effect of this particular study should tremendously enhance the value of comparative medical statistics. As an instance of the practical value of some of the investigations, Madsen cites the investigation on the epidemiology of tuberculosis which was made in the three Scandinavian countries in 1925 and which showed the different manner in which tuberculosis has developed in these countries. In Denmark, for instance, tuberculosis has been spreading for a hundred years. This is probably one of the reasons it is now decreasing rapidly. Practically the whole population in all parts of Denmark have been infected and hence many persons are immune, whereas in Norway and Sweden the spread to remote parts has taken place more recently, and the tuberculosis rate has shown a tendency to rise until the last few decades.

GERIATRICS—THE CARE OF THE AGED

Geriatrics is a term, inclining toward general adoption, for that division of medicine which deals with the treatment of the diseases and special problems of old age and senescence¹. Between 1900 and 1930, Horn² says, there was an increase of 52 per cent in the actual numbers of those 60 years of age and over, compared with an increase of only 38 per cent in the total population. According to present trends, therefore, by 1990 the senescent population will have become equal to, if not in excess of, the preadolescent population. Furthermore, disease in old age differs in many ways from disease in younger groups, the incidence is different and the symptoms often diverge widely from those seen in middle and early life.

⁴ Madsen Thorvald. The Scientific Work of the Health Organisation of the League of Nations. *Bull. New York Acad. Med.* 13: 439 (Aug.) 1937.

¹ Giese C. L. *Geriatrics*. *Colorado Med.* 29: 159 (April) 1932.
² Horn Will S. *Geriatrics as a Modern Specialty*. *Texas State J. Med.* 33: 448 (Oct.) 1937.

The diseases of old age which call for medical attention may be divided roughly into two types: those which also occur in younger years and those which are definitely characteristic of the degenerative processes inherent in continued living. Pepper³ has pointed out some important features. The stomach is a frequent seat of cancer in the aged, but the process may be amazingly latent in comparison with that in younger years. Ulcer becomes increasingly rare with advancing years. Acute appendicitis is now believed to be more common than was formerly thought but, because of its usual mild onset, is much more dangerous and difficult to diagnose than in youth. Tuberculosis is not as rare as might be anticipated. Both the lobal and bronchial forms of pneumonia are common. Here too the symptoms may be so mild that diagnosis is often difficult. Most acute infections are less common and when present are likely to be symptomatically milder, although more fatal and productive of serious complications.

Perhaps the degenerative changes rather than the diseases proper identify old age most sharply. As we grow older, according to Horn, there is a decrease of water and an increase in calcium content in the tissues, with consequent loss of resilience. The vasomotor upsets of the menopause frequently carry over into the years of senescence. In such instances irritability, impatience, inability to relax and insomnia are frequent. The progressive hypertrophy of the prostate in advancing years is a common source of progressive decline. The obstruction that it produces frequently causes back pressure on the kidneys, and the resultant nitrogen retention may gradually affect the whole organism. Loss of weight, diminishing appetite, lack of gastric secretion and diverticulosis of the esophagus or bowel may perhaps all be considered incident to senescent degeneration.

Sclerosis of the blood vessels is well nigh universal in this age group but makes its appearance at different ages and progresses with varying rates of speed. The cerebral circulation and the nervous system are often involved early. An early loss of memory is not, however, necessarily on a circulatory basis, since sometimes cerebral deterioration is not found in even far advanced arteriosclerosis of the brain.

The wise physician must be on the alert to recognize acute preventable diseases in a far less obvious form than in younger persons. He must recognize also that there is often less which can be done for these diseases. The average elderly patient, according to Horn, is not tolerant of extended diagnostic studies and is often merely forced into it by the urgings of overanxious relatives. Worcester⁴ emphasizes this point in an exceptionally able and unusual discussion of the subject. "The relief and comfort of our aged patients

³ Pepper O. H. *Notes in the Field of Geriatrics*. *VI Clin. North America* 20: 127 (July) 1936.

⁴ Worcester Alfred. *The Care of the Aged, the Dying and the Dead*. Baltimore: Charles C. Thomas, 1935.

should be our aim, rather than the prolongation of their lives. But this is hardly a true distinction, for the relief and comfort given to an aged patient often effect the prolongation of life if only by restoring the willingness to live." The restriction of food and of fluids seems to be desirable in the prolongation of life and healthfulness of old age. It is, however, too common for elderly persons to reduce their diet by limiting food essentials either because of some idea of their own or because of advice from a well meaning but ill advised physician. Few apparently drink any milk at all and deficiency of vitamins may be more common in old age than is often recognized. Glandular deficiencies are probably an integral part of senescence, but thyroid and insulin when indicated should be administered cautiously. Sedative drugs and morphine act quite differently in older persons, and overdosage and addiction are dangerously easy. Rest is important, but the frequent neglect of exercise should be remedied. The problem of laxatives is often difficult but must be solved for each patient individually. Finally, as Worcester has emphasized, the psychologic approach to older patients is of the greatest importance. They are frequently dependent on the physician not so often for drugs or directions as for the human support which perhaps means more in advanced years than at any other time. It is desirable to shun the impossible task of rejuvenation, to preserve the habitual pleasures and to adjust professional visits to the psychologic necessity of the patient rather than to the purely physical and that may be rendered.

Current Comment

RETENTION AND ELIMINATION OF SELENIUM

As already pointed out in *THE JOURNAL*¹ the poisonous character of the forage crops and grains grown in certain of the North Central and Western states in this country is due to the presence of compounds of selenium in these feeds. Many people living in these regions excreted appreciable amounts of selenium in the urine and showed symptoms of chronic selenium poisoning. Of considerable interest therefore are the recent studies from the National Institute of Health on the distribution of selenium in tissues in chronic poisoning and its elimination from the body. Sodium selenite was administered subcutaneously or by mouth to cats for from fifteen to 188 days and in dosages representing from 0.02 to 0.25 mg. of selenium per kilogram of body weight. A large part of the substance (from 50 to 80 per cent) was excreted in the urine, a greater proportion when the selenite was given subcutaneously than when given by mouth. The concentration in the urine was closely parallel to the level of

intake. Much less of the selenium administered was present in the feces, particularly when the substance was given subcutaneously. After chronic poisoning the liver, spleen, kidney and pancreas contained the greatest concentrations of selenium. Although the blood contained relatively small amounts, more was found in the red cells than in the plasma. In another study² of the toxicity of selenium in rats, cats and rabbits it was observed that whereas its continued administration was cumulative in its effects, much of it was susceptible to detoxication. Furthermore there was no evidence of an acquired tolerance to this element. After some 170 days of administration of sodium selenite the urinary excretion in four animals was from 190 to 252 micrograms per hundred cubic centimeters. The selenite was then discontinued, within two weeks there was a sharp drop in the selenium excretion and in a month only from 3 to 19 micrograms was present in the urine. It is apparent that the elimination from the body is rapid though traces persist notably in the liver, for a long time. Though there is no assurance that the greater portion of even any of the selenium ingested by man and animals on seleniferous soils is in inorganic form and is therefore as toxic as sodium selenite the foregoing studies will serve as an important guide in estimating the health hazard to those who live in regions where selenium occurs in the soil, water and food plants.

THE PATIENT HIMSELF

The phenomenal advances of medical science have so largely engrossed the attention of students and teachers of medicine that our schools are charged frequently with failure to teach the embryo physician that his patients are human beings and that he must treat individuals not mere manifestations of a disease. One of our leading universities has made a definite effort to counteract this tendency and their experience of seven years seems to have more than justified the undertaking. Elsewhere in this issue Bailey and Weiskotten¹ describe the procedure employed at Syracuse to demonstrate to undergraduate students the importance of considering the personality of the patient and all the factors environmental and otherwise, which, impinging on him inevitably influence and perhaps greatly modify his reaction to disease. Especially wholesome in the Syracuse plan is the stress on having the student himself investigate the social, economic, religious or industrial relationships of his patient instead of depending on the second hand information relayed by a social worker. On the doctor is laid the responsibility for understanding all the adjustments that may be needed in order to give to the patient the best possible chance of recovery. An index of the success of the method may be found in the work recently published by a Syracuse graduate, "Disease and the Man" which is briefly reviewed in this issue of *THE JOURNAL*.

¹ Selenium Problem editorial *J. A. M. A.* 104:20 (Jan. 3) 1935. Toxic Effects of Selenium *ibid.* 106:926 (March 14) 1936. Selenium Content in Wheat *ibid.* 107:134 (July 11) 1936. Selenium Poisoning in the United States *ibid.* 107:968 (Sept. 19) 1936. The Possibility of Human Selenium Poisoning *ibid.* 108:210 (Jan. 16) 1937.
² Smith M. I., Westfall B. B. and Stohlman F. T. *Publ. Health Rep.* 52:1171 (Aug. 27) 1937.

¹ Smith M. I., Stohlman F. T. Jr. and Lillie R. D. *J. Pharmacol. & Exper. Therap.* 60:449 (Aug.) 1937.
² Bailey A. A. and Weiskotten H. C. The Training of the Student in What Is Involved in Adequate Medical Care. *this issue* p. 2136.

Association News

RADIO BROADCASTS

The American Medical Association and the National Broadcasting Company present the fifth series of network health programs, beginning Oct 13, 1937, and running weekly through June 15, 1938. The programs will be presented over the Red network each Wednesday at 2 p m eastern standard time, 1 p m central standard time, 12 o'clock noon mountain standard time and 11 a m Pacific standard time.

The dates and topics of the broadcasts for the coming month are as follows:

Diet

December 29—Dietary Fads: facts vs fallacies in relation to prevalent false notions on diet.

Contagious Diseases

January 5—Sneezes and Snuffles: cause, spread, prevention of colds, pneumonia and influenza, importance of early medical care.

January 12—Scarlet Fever, Measles and Whooping Cough: modern attitudes toward these diseases, their prevention by community cooperation.

January 19—Smallpox and Diphtheria: unnecessary diseases, preventable by immunization of infants.

The stations on the Red network are privileged to broadcast the program but, since it is a noncommercial program, they are not obliged to do so. Interest on the part of medical societies, women's auxiliaries and others may have weight with program directors of local stations. A personal visit to the program director might be advisable if the program is not being taken by a local station. This is an opportunity for the appropriate committees of county medical societies to indicate their interest in having this program broadcast in their community and to enlist the interest of other groups.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

CALIFORNIA

Personal—Ernest O Lawrence, PhD professor of physics and head of the radiation laboratory, University of California Berkeley, was recently awarded the Hughes Medal of the Royal Society, London, for his work on the development of the cyclotron and its application to investigation of nuclear disintegration, according to *Science*.—Dr Solomon Strouse, formerly of Chicago, has been appointed associate clinical professor of medicine at the University of Southern California Medical School, Los Angeles.

Residency in Physical Therapy—A residency in physical therapy has been established at the Los Angeles County General Hospital. The resident must be a graduate of an approved medical school of recognized standing, must have completed satisfactorily one year's rotating internship in an approved hospital and possess, or be able to secure promptly, a physician and surgeons certificate to practice in California. His experience must include one year's recent full time experience in the administration of physical therapy in an approved hospital some of which must have been in a supervisory capacity. The Los Angeles County Civil Service Commission will give additional information concerning the residency.

Midwinter Course in Ophthalmology—The seventh midwinter course of the Research Study Club of Los Angeles, January 17-28, will include sixteen lectures on ocular muscles by Dr Alfred Bielschowsky, professor of ophthalmology, Dartmouth Medical School, Hanover, N H. Other lecturers will include Drs Edward Jackson, Denver; John O McReynolds, Dallas, Texas; and Frederick Jobe, BS, of the scientific bureau of Bausch and Lomb, Rochester, N Y. Work on the ear, nose and throat will be covered by Drs Arthur

W Proetz, St Louis; Grant L Selfridge, San Francisco; Walter P Covell, San Francisco; Simon Jesberg, Los Angeles; Louis K Guggenheim, St Louis; John F Barnhill, Miami Beach, Fla; and Vern O Knudsen, PhD, Los Angeles. Applications to take the course should be made to Dr Donald S Dryer, secretary, 2007 Wilshire Boulevard, Los Angeles. The fee is \$50. Dr Barnhill's course in dissection and cadaver surgery of the head and neck will begin January 10. It is limited to fifty persons and the fee is \$100.

COLORADO

Appointments to State Board of Health—Dr James S Cullyford has been appointed director of the newly created division of rural health work and epidemiology of the Colorado State Board of Health. Dr Cullyford graduated at the University of Colorado School of Medicine, Denver, in 1933 and received his certificate in public health from the University of Minnesota School of Public Health in June 1937. Frank S Morrison, LL B, has been appointed director of vital statistics of the state board. He recently completed a course on general statistics at the Johns Hopkins School of Hygiene and Public Health, Baltimore.

IDAHO

State Board Abandons Reciprocity Relations—At its meeting in Boise, October 5-6, the Idaho Medical Examining Board passed a resolution canceling all reciprocity provisions in the granting of licenses for the practice of medicine and surgery in Idaho and provided that in the future all applicants will be examined by the Idaho board. It was provided further that an applicant for license will be entitled to a credit of 0.5 per cent for each year of practice obtained prior to his application for license in Idaho, not including years spent in hospital internship or residencies.

ILLINOIS

New Health District—The public health units in Champaign and Urbana have been combined in a new health district replacing the former separate health activities in the two townships. Dr G Howard Gowen has resigned as assistant to the chief division of communicable diseases, state department of health, Springfield, to direct the new unit, effective December 6.

Society News—Dr Lee C Gatewood, Chicago, discussed 'Gastric and Duodenal Ulcer' before the Will-Grundy County Medical Society at Joliet November 24. At a meeting of the medical societies of Lee and Whiteside counties in Sterling, November 18, Drs Philip H Smith, Evanston, Ill, and Raymond F Grisson, Chicago, spoke on "Contraindication of Cesarean Section: Prevention and Treatment of Abortion" and on "Treatment of Infectious Diseases" respectively.

The Du Page County Medical Society was addressed in Elmhurst November 17 by Drs Roland P Mackay on "Treatment of Neurosyphilis" and Eric Oldberg on "Surgical Treatment of the Complications of Neurosyphilis", both are of Chicago. Dr Walter H Baer, Peoria, discussed "Shock Therapy of Schizophrenia: The Use of Insulin and Metrazol" before the Sangamon County Medical Society in Springfield December 2.

Chicago

Medical and Dental Laboratory Building Completed—The new building containing the medical and dental laboratories of the University of Illinois has been completed and occupied. The new unit is of red brick, collegiate gothic and cost \$1,550,000. Seven of the fifteen floors are devoted to the medical facilities and the rest to the dental clinics. The building connects through corridors with a similar unit entirely occupied by the medical school and with the Illinois Research and Educational Hospital, which supplies the patients and nurses. New equipment includes a biplane fluoroscope. A cancer clinic is to be started in lead lined rooms in the basement with \$300,000 already appropriated for radium and equipment. It is reported Dr David J Davis is dean of the medical school, Frederick B Noves, DDS, of the dental school and Dr Major H Worthington is in charge of the research and educational hospital.

INDIANA

Personal—Dr George E Denny, Madison, has been appointed medical superintendent of the Muscatatuck Colony for feebleminded at Butlerville. Dr Herman G Morgan has completed twenty-five years' service as secretary of the Indianapolis board of health. Dr and Mrs Walter R Hutcheson, Greencastle, have given a new \$30,000 nurses' home to the Putnam County Hospital.

announced. It is planned to use the money as the nucleus of an endowment fund to establish a self-sustaining cancer service for indigent patients at the hospital, it was said.

SOUTH CAROLINA

Personal—Dr Andrew A Walden, North Augusta, was chosen as the outstanding citizen of the town by the local post of the American Legion and received a bronze plaque at ceremonies on Armistice Day—Dr John F Busch has resigned as superintendent of the Greenville County Sanatorium, Greenville, to join the staff of the Georgia State Board of Health, it is reported.

TENNESSEE

Society News—Dr Eugene Orr, Nashville, addressed the Davidson County Medical Society, Nashville, October 26, on "Pseudosinusitis"—Speakers at the meeting of the Hardin, Lawrence, Lewis, Perry and Wayne Counties Medical Society in Savannah October 26 were Memphis physicians Drs Robert Lyle Motley, on "Treatment of Congestive Heart Failure and Edema in General", Lucius C Sanders, "Thyroid Disease, with Special Reference to Its Effect on the Heart", Mike W Holehan, "Etiology, Pathology and Rational Treatment for Hemorrhoids" and Charles W Ingle, "Treatment of Malignant Tumors of the Breast"—Dr Alvin J Weber Jr, Knoxville, addressed the Knox County Medical Society, Knoxville, October 26, on "Infirmities of the Aged"—Drs Homer D Hickey and John W Hocker, Chattanooga, addressed the Hamilton County Medical Society, Chattanooga, November 11, on "Gall-bladder Surgery" and "Diphtheria Its Diagnosis and Management" respectively.

VIRGINIA

Graduate Course at the University—The fourth graduate course in ophthalmology and otolaryngology was held at the University of Virginia Department of Medicine and the University Hospital, December 14-17. The following were instructors: Drs Francis H Adler, Oscar V Batson, Philadelphia, Bernard Samuels, James W White, Frederick M Law and Robert E Buckley, New York, Vincent W Archer, Charlottesville, and Stacy R Guild, Ph D, Baltimore, and Mr Edgar B Burchell, New York.

Society News—A symposium on diseases of the respiratory tract was presented at a meeting of the South Piedmont Medical Society, November 16, by Drs Edward B Robertson, Danville, James Morrison, Lynchburg, and Rawley H Fuller, South Boston—Dr Horton R Casparis, Nashville, Tenn, addressed the Norfolk County Medical Society recently on "Medical Aspects of Child Training"—Drs Francis Bayard Carter and Wilburt C Davison, Durham, N C, addressed the Danville-Pittsylvania Academy of Medicine at a recent meeting on "Toxemias of Pregnancy" and "Sulfamidamide Therapy" respectively—At the quarterly meeting of the Mid-Tidewater Medical Society at Millers Tavern, October 26, the speakers were Drs Harry A Tabb, Gloucester, on "Practical Methods of Infant Feeding", Malcolm H Harris, West Point, "Treatment of Burns in the Home", and Clarence Campbell Sparta, "Eclampsia"—Dr John T Hundley Jr, Lynchburg, addressed the Lynchburg Academy of Medicine, November 1, on "Clinical Significance of Erythrocyte Sedimentation Test"—Dr Howard R Masters, Richmond, addressed the Fredericksburg Medical Society at its November meeting on mental hygiene.

WISCONSIN

Personal—Dr Archibald D Campbell, Richland Center, was honored with a testimonial dinner, October 21, by physicians of the community and the surrounding territory. Dr Campbell is 72 years old and graduated from the Louisville Medical College in 1896—The house of delegates of the State Medical Society of Wisconsin at its recent annual meeting decided to send the executive secretary of the society, Mr J George Crownhart, to Europe to make a critical first-hand study of sickness care operating under control of governments in various countries.

District Meetings—Drs Joseph E Schaefer and Edward H Hatton, Chicago, were the guest speakers at a joint meeting of the fifth councilor district of the State Medical Society of Wisconsin and the eighth dental councilor district, November 18. Dr Marcos Fernan-Nunez, Milwaukee, spoke after dinner on "Spanish Medicine and the Spanish Revolution"—The autumn meeting of the ninth councilor district was held at Marshfield November 3 with the following speakers: Drs Leland C Pomainville, Wisconsin Rapids, on "Chest Injuries",

Clifford F Broderick, Nekeosa, "Recent Advances in the Therapy of Arterial Hypertension", Karl H Doege and Robert S Baldwin, Marshfield, "Clinical Cases of Nephritis", Winchell McK Craig, Rochester, Minn, "Surgical Treatment of Hypertension" and "Neurosurgical Aspects of Head Injuries," and Carl W Apfelbach, Chicago, "The Importance of Pathologic Examinations."

Society News—Dr Walter P Blount, Milwaukee addressed the Brown-Kewaunee-Door County Medical Society, Green Bay, November 9, on "Fractures in Children"—At the annual meeting of the Grant County Medical Society in Lancaster in October the speakers were Drs Arnold S Jackson, Madison, on "Errors in the Diagnosis and Treatment of Hyperthyroidism", Roscoe L McIntosh, Madison, "Pyogenic Dermatoses", Lyman A Copps, Marshfield, "Indications for Bronchoscopy" and Alexander R MacLean, Rochester, Minn, "Infantile Paralysis"—Dr Matthew N Federspiel, Milwaukee addressed the Racine County Medical Society, Racine, November 3, on "Maxillofacial Injuries"—Dr Milton Trautmann of the state board of health, Madison, discussed diagnosis and treatment of syphilis at a meeting of the Waupaca County Medical Society, New London, November 17—Dr John H J Upham, Columbus, Ohio, President of the American Medical Association, and Clarence A Dykstra, Litt D, president of the University of Wisconsin, Madison, were speakers at the annual dinner of the Medical Society of Milwaukee County December 9 in Milwaukee.

GENERAL

Changes in Status of Licensure—The following action of the Florida State Board of Medical Examiners has been reported:

Dr Lemuel A Carter Bunnell Fla license restored.

The Minnesota State Board of Medical Examiners reports the following action:

Dr John Lynn Erickson Canby license suspended November 12 for two years for conduct unbecoming a person licensed to practice medicine and detrimental to the best interests of the public.

The Wisconsin state board of medical examiners reported the following action taken at a meeting October 14:

License of Dr Elgie Krut Lancaster revoked on the basis of a court record of his conviction and sentence for performing an illegal operation.

Fraudulent Salesman—The National Publishers Association, Inc, reports the activities of a man who has been soliciting magazine subscriptions among physicians, giving the name of a fictitious company as the distributor. He has sold the magazines at low rates, pocketed the collections and made no report to the publishers. He is said to use a printed form carrying the name Frank Crowell, 55 West Forty-Second Street, New York, N Y. There is no such person at the address given and mail so addressed will be returned marked "Unknown". The man uses the names L Hordes, George Cowan, J Stern and Jack Stern. The following description is given: age 30 to 32, height 5 feet 8 or 10 inches, weight 170, dark hair, dark complexion, thick lips, loud speech, rapid actions, displays nervousness, two teeth missing in front of mouth, lower teeth protrude slightly past uppers, slightly protruding lower jaw, shabbily dressed. The publishers association asks any person solicited by this man to notify the police and wire the association collect. The address is 232 Madison Avenue, New York, N Y.

Impostor Defrauds Pathologists—Physicians in Louisville, Ky, and Topeka, Kan, have recently reported activities of a man who poses as Dr Eustace L Benjamin, associate professor of pathology, Northwestern University Medical School, Chicago, and who thereby induces physicians to endorse checks subsequently proved to be worthless. Several other pathologists recently reported that they had been approached by this man, who has also used the names of Dr Emmerich von Haam, Columbus, Ohio, and Dr James P Simonds, Chicago (THE JOURNAL, November 6, page 1552). The real Dr Benjamin stated at that time that he cashed a check during the past winter for this man, who said then he was a pathologist from Mercy Hospital, Canton, Ohio. Checks for amounts ranging from \$10 to \$100 have been cashed for him by pathologists in several laboratories. The impostor is said to be about 40 years old, of average size, with hair tinged with gray. His neck is short and thick, his face is round and his eyes bulge somewhat. He is familiar with terminology and has a fair knowledge of laboratory methods, according to the reports.

Appendicitis Mortality in 1936—Statistics from 183 American cities show that there were 144 deaths of appendicitis per hundred thousand of population during 1936, a slight reduction from the rate of 1935, which was 147. The lowest rate on record is 13, which occurred in 1918. Rates for individual

cities ranged from no deaths in Cicero, Ill., and Orange, N. J., to 877 in Shreveport, La. No satisfactory explanation of the great variation can be advanced without a thorough study of local factors, according to Frederick L. Hoffman, LL.D., consulting statistician of the Biochemical Research Foundation of the Franklin Institute, Philadelphia, who made the tabulation. The ten cities with the highest rates are: Shreveport, 877; Wilkes Barre, Pa., 365; Sioux City, Iowa, 353; Passaic, N. J., 351; Oak Park, Ill., 341; Camden, N. J., 316; Nashville, Tenn., 309; Knoxville, Tenn., 301; Salt Lake City, Utah, 301; and Memphis, Tenn., 294. These rates are affected by local hospital facilities, the report said. The ten cities with the lowest rates, other than the two with no deaths, are: Newton, Mass., 14; Covington, Ky., 15; Union City, N. J., 16; Bethlehem, Pa., 17; Gary, Ind., 27; San Jose, Calif., 29; Newport, R. I., 33; Yonkers, N. Y., 34; and Fresno, Calif., 35. Mortality in the five largest cities was as follows: New York, 126; Chicago, 13; Philadelphia, 11; Detroit, 16; and Los Angeles, 151. Dr. Hoffman also analyzed the figures geographically and by age and sex. According to his table the rate was highest in the western mountain region, 25 per hundred thousand, a fact that might be explained by inaccessibility of medical and surgical aid, he pointed out. The rate for white men reached a maximum of 244 for the age group 75 to 79, while for white women the maximum rate was 168 for the age group 60 to 64.

General Meeting of Bacteriologists' Society—The thirty-ninth general meeting of the Society of American Bacteriologists will be held in Washington, D. C., December 28-30, at the Mayflower Hotel under the presidency of James M. Sherman, Ph.D., Cornell University, Ithaca, N. Y. Among speakers who will address the section of medical bacteriology, immunology and comparative pathology will be:

Michael Heidelberger, Ph.D., New York: Antigenicity with Special Reference to Infectious Agents.
Dr. Edwin W. Schultz, Stanford University, California: Antigenic Properties of Poliomyelitis Virus.
Dr. Harry S. Eagle, Baltimore: Effects of Formaldehyde on Horse Antipneumococcus Serum and Diphtheria Antitoxin and Their Significance for the Theory of Antigen Antibody Aggregation.
Dr. Earl B. McKinley, Washington, D. C.: Intradermal Tests in Leprosy with Antigens of Acid-fast Bacteria.
Walter J. Nungester, Sc.D., and Roy G. Klepser, Ann Arbor, Mich.: A Possible Mechanism of Lowered Resistance to Pneumonia.
Dr. Chester S. Keefer, Boston: Bacteriolytic in Gonococcal Arthritis.
Dr. Perrin H. Long and Eleanor A. Bliss, Sc.D., Baltimore: Experimental and Clinical Observations upon Chemotherapy in Gonococcal Infections.
Dr. Ralph R. Mellon and Lawrence E. Shinn, Pittsburgh: Limiting Factors of Sulfanilamide's Action and the Phenomenon of Potentiation.
Francis B. Gordon, Ph.D., and Edwin H. Lennette, Ph.D., Chicago: The Blood Stream in Experimental Poliomyelitis.
Dr. Albert B. Sabin and Peter K. Olitsky, New York: Mode of Action of Zinc Sulfate Spray in Preventing Infection with Nasally Instilled Poliomyelitis Virus.
Jean Broadhurst, Ph.D., and Gladys Cameron, New York: Virus Forins Present in Scarlet Fever.

FOREIGN

Personal—Sir Henry H. Dale, director of the National Institute for Medical Research, London, has received the Copley Medal of the Royal Society of England in recognition of his "important contributions to pharmacology, particularly to the pharmacology of muscle and neuromuscular transmission." In 1933 Sir Henry delivered the Dohme Lectures at Johns Hopkins University School of Medicine, Baltimore.—Major-General William P. McArthur has been selected to succeed Lieutenant-General Sir James A. Hartigan as director-general of Army Medical Services when the latter completes his tenure of office March 1, 1938.

Government Services

Dr Morgan Named Regional Consultant

Dr. Thomas E. Morgan, health officer of Pinellas County, Fla., with headquarters in Clearwater, has been appointed regional medical consultant to the Children's Bureau of the U. S. Department of Labor for the southeastern district. Dr. Morgan will have his headquarters in Washington, D. C. The southeastern district includes the District of Columbia, Delaware, Virginia, West Virginia, Georgia, Florida, North Carolina and South Carolina. Dr. Morgan, who is 37 years of age, graduated at the University of Georgia School of Medicine in 1925. For several years he was associated with the state board of health in Jacksonville and in June 1936 was appointed director of the newly created health unit in Pinellas County.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Nov. 27, 1937

What Is Wrong with the British Diet?

A former chief medical officer of the Ministry of Health, Sir George Newman, said that the British people were better fed than at any period of their history. That appears to be true, but, in the crusade now going on to improve the health of the people, attention is concentrated on exercise and nutrition, and alleged malnutrition has been used as a political weapon in attacking the government. No doubt there is room for improvement, but whatever defects exist in the British diet are due more to unwise spending than to want of means. In an article in the *Times*, the dietitian Sir Edward Mellanby, says that we are at the beginning of a great movement to prevent ill health and disease. In the British diet the bulk of the foods—cereals, pork, poultry, white fish, vegetable oils, sugar and jam—are deficient in mineral elements, especially calcium, and in most of the vitamins. These deficiencies are not made good by the enormous consumption of the national beverages—tea, coffee, beer and alcohol. But there are "protective foods" which are rich in these essential substances—milk and other dairy products, eggs, green vegetables, liver and other glandular organs, fat fish such as herring, mackerel and salmon, fish oils and fruit. If a sufficiency of these protective foods is not eaten, poor physical development and certain forms of ill health follow. Our diet should include a much larger amount of these and not be overweighted, as it is, with energy-giving foods. Unfortunately the protective foods are relatively expensive as compared with cereals, so that the poorer the people the greater the proportion of nonprotective foods eaten. For the young and for adolescents the problem is much more important than for adults. This explains, Mellanby thinks, the many years that have elapsed between the discoveries of science and the present public interest in proper feeding. If a dietetic cure could have been found for cancer or chronic rheumatism of the adult, it would undoubtedly have been seized on with avidity. But our future adults should be considered. If we want British athletes to carry off the world's laurels, we must see that they grow from birth under conditions of perfect nutrition. There is less mystery in the remarkable athletic abilities of the Finns when it is remembered that their daily milk consumption is three per head that of the British.

The habit of giving children tea is wrong. Their normal drink should be milk containing from 3 to 3.5 per cent of fat, not rich in cream, which often upsets them. Mothers would be saved much trouble and anxiety if they gave their infants, even the breast-fed, a small teaspoonful of cod liver oil daily, from the day of birth. Up to the end of adolescence the daily milk ought not to be less than one pint, and two pints would be better. This supplies the abundance of calcium required for the growth of the bones and teeth. The trouble with adults is that they eat what pleases them. They would be well advised to take a pint of milk daily and to look with favor on eggs, green vegetables and other protective foods. They would then be fitter and the days of chronic ill health would be delayed. For the sedentary well-to-do over 40 milk might well replace two of the three lots of meat indulged in daily. The objection that milk makes people fat holds only when it is taken as an extra; it ought to replace some of the bread, sugar or other energy-bearing foods. In Tristan da Cunha where until lately there was no bread or other cereal and the main food was milk, mutton, fish, eggs and potatoes, there was no rheumatism or arthritis and the teeth were relatively free from caries. In recent years well-meaning people have been sending flour and

sugar to the island and, as might be expected, the first curse of civilized communities, dental caries, is increasing among the children

The Reconditioning of Army Recruits

Until recently, army recruits had come up to prescribed physical standards and, if they did not, were rejected. But in this free country recruiting is purely voluntary and the obtaining of sufficient force for defense in a conscript Europe, armed to the teeth, has become a problem. The army authorities have therefore embarked on the experiment of endeavoring to make fit for the army, by dieting and exercises, men who previously would have been rejected. For the first time in army history a recruits physical development depot has been established. Formerly if a chest failed to fill the tape measurement or a head to touch the height recorder the applicant, perhaps otherwise full of promise, was rejected. Now the men who fall just below the borderline are taken on approval and undergo a course of training to make them fit. While the ranks were short by 10,000 men, 68 per cent of applicants were being turned away for minor disabilities. So far the experiment has been successful and those who appeared to be poor material have been turned into men erect in carriage, well developed and sound in mind and limb. Such defects as slight curvature of the spine, flatfoot and fast heart have yielded to the treatment. Further, the mechanization of the army has allowed differences of standard to be introduced. The first line fighting troops must be physically sound, able to march carrying a pack and able to eat "hard" rations. Men of the "mechanized class" need not be particularly good marchers, but they must qualify as marksmen and occasionally subsist on "hard" rations. Motor drivers normally receive cooked rations and are not called on to march but must have good sight. In recent years out of three men applying for enlistment one was rejected at sight, the second was rejected on physical medical or educational grounds, and the third was accepted.

PARIS

(From Our Regular Correspondent)

Nov 27, 1937

Suppression of Quackery

The uncontrolled exploitation of all sorts of cure-alls in the newspapers here and the license to advertise claims of miraculous cures, such as sympathicotherapy, the latest form of quackery here, has at last aroused the medical profession to plan a counteroffensive. In the November 21 issue of the *Concours medical*, Dr Lavalee quotes the paragraphs of a bill which Mr. Henri Sellier, who was minister of public health until the resignation of the last cabinet, had planned to have passed by the legislature. In the first section, any one who advertises a drug or method of diagnosis or cure is prohibited from using the word "cure," to publish any testimonial in which a "cure" is described, to add any comments on the medical aspects of any method or drug or to describe the symptoms of the disease which can be relieved. These restrictions are especially applicable to reputed tuberculosis, cancer and venereal or menstrual disturbance "cures." All such infractions are to be penalized. This proposed law was criticized because it left a loophole for quacks who claim to cure hernias, varicose veins, obesity and diseases of the scalp, rheumatism and other conditions, but the ex-minister of public health said that before the bill became a law these forms of quackery could be included.

Unfortunately, this bill was never introduced and the journals are filled with the advertisements of all forms of quackery. One of these, sympathicotherapy, which makes diagnoses by pressure on supposed sympathetic nerve endings in the nasal septum, has a dozen branch offices in Paris and some in every large city of France. Lavalee in his editorial states that as long as no laws exist to suppress quackery the only hope of the profession is to try to enlighten the public by all forms of

propaganda by means of the radio, cinemas and newspapers. The question is Who will pay for such a campaign against quackery, and how much will it accomplish? A certain number of people want to be deceived and will lend an attentive ear to claims of cures which border on the miraculous.

One means of combating this ever increasing wave of quackery would be to have a council on pharmacy and chemistry (like that of the American Medical Association) appointed, to which manufacturers of pharmaceutical specialties, of which there are thousands in France, should submit their preparations voluntarily for the approval of the council. Any one who knows the chaotic state at present of such supervision in France will welcome the plan, but Lavalee says that the task of the council will not be an easy one. It would be ideal to have laws in force which already exist in other countries, that all foods and drugs must receive official approval before being placed on sale.

Social Laws and Hospitalization

At the first French Hospital Congress, held recently in Paris, a paper was read by Dr. Renon of Niort on the effect of assistance and other social laws on hospitalization in France. He emphasized that the old notion that public hospitals receive only those unable to pay no longer holds true for the present state of affairs. The advances made by the medical sciences on the one hand, but more particularly the evolution of the laws of assistance and of social medicine, have transformed the meaning of the term hospitalization. Although the number of persons who have received aid from the state has decreased considerably since 1890, the number of such persons who have been hospitalized has increased by 82 per cent, which means that less and less care is being given at the homes of the indigent. The legislation covering industrial accidents has also greatly added to the number who receive hospital treatment. Those covered by the social insurance law of 1930 are reimbursed for any outlays incidental to illness or confinements. The sums allowed for such care are so small that the majority of the insured find it cheaper to go to public hospitals, where a fixed rate of about \$1.50 a day for the socially insured is less than they would be obliged to spend to be cared for at home or in a private hospital. It must be remembered that the socially insured are not reimbursed in full for their outlays, but only to the extent of 80 per cent of these.

At present, in addition to indigents, the industrially injured and the socially insured, a fourth group of "pay" patients are now received in public hospitals. There has been an increase since 1900 of over 210 per cent in the number of this fourth group who are being hospitalized. The growth of hospital facilities has not kept pace with the number of applicants for hospitalization, being only 76 per cent of what they ought to be. There is a complete lack of coordination between the social role of public hospitals and their technical and judicial organization. By the word judicial is meant that legislators pass all sorts of laws to promote the extension of free medical aid without taking into consideration the necessity of providing corresponding hospitalization facilities, particularly in the case of pulmonary tuberculosis. The only relief from the present situation is to permit all private hospitals to receive the socially insured at a fixed rate instead of limiting this privilege to those who have made contracts with the caisses, or social insurance disbursing offices. If the insured do not wish to enter private hospitals, provision should be made, at least in public institutions, for receiving the socially insured in small wards to be reserved for pay patients and every qualified physician should be allowed to take care of such patients, instead of limiting the privilege to the regular staffs of the public hospitals. In order to avoid the resulting confusion only such physicians as have passed a special examination shall be allowed to treat private patients in public hospitals and receive remuneration from the patients. The latter privilege is also to be given members of

the regular staff who have occasion to treat such patients. This would put a stop to the present system of having the staff treat pay patients in public hospitals without any recompense.

French Ophthalmologic Congress

The first meeting of the French Ophthalmologic Congress was held June 28-30 in Paris. A paper on optochiasmatic arachnoiditis was read by Drs. Bollacq, David and Puech, based on 129 observations, of which sixty three were found in the literature and the others from the neurosurgical service of La Pitié Hospital. An exploration of the region of the optic chiasm had been carried out in all of the 129 cases. Clinically, they are characterized by varied visual disturbances and pathologically by changes which it has been possible to study only as the result of operative intervention. The extra-ocular clinical forms are less important than the purely ocular ones. The latter can be placed in three groups: (1) the macular neuritis syndrome, characterized by a diminution of vision, a central scotoma and papillary changes, of which atrophy with poorly demarcated edges is the most typical, (2) a chiasmatic syndrome with decreased visual acuity, atypical and asymmetrical changes in the temporal field and by papillary atrophy, and (3) the simple atrophy syndrome of the optic nerve with concentric narrowing of the visual field. Certain forms with lateral hemianopia, with decrease on the nasal or horizontal side of the visual field, are less often seen.

The diagnosis is difficult because of the protean character of the symptoms and the fact that none are characteristic, being found in other conditions. Ventriculography is the most important method of differential diagnosis from tumors of the hypophysis.

A description was given of the technique of transfrontal exploration, which has a low mortality. The best results followed operation in early cases in which (a) visual acuity had not been altered materially in a peripheral direction and especially centrally, and (b) when a not too accentuated optic atrophy was present.

In the discussion, François of Belgium reported the experience of a patient who showed a bilateral papillary stasis with rapid diminution of vision after eighteen months' treatment for syphilis. The neurologic examination was negative but there were typical cytologic and chemical changes in the spinal fluid. Energetic antisiphilitic treatment did not prevent blindness, and a decompression was of no benefit. An exploratory endocranial exploration revealed an optochiasmatic arachnoiditis and was followed by a restoration of one-fifth vision to the left eye, a complete atrophy persisted on the right side. Three months later, pyretotherapy was used and resulted in a restoration of vision in the right eye of about two thirds and an almost normal visual field, which has continued for more than a year.

Recurrent Hematemesis with Splenomegaly

At the October 15 meeting of the Société médicale des hôpitaux a case was reported by Milhit and his associates of recurrent gastric hemorrhages in a boy, aged 10 years, with greatly enlarged spleen. Microscopic examination of the spleen after its removal revealed a thrombosis of the splenic vein of long duration, as well as changes in the reticulo endothelial structure. The rapid decrease in size of the spleen after a hemorrhage or the use of epinephrine shows that the splenomegaly is essentially the result of stasis. At operation an extensive collateral circulation is found already developed in the gastrosplenic and phrenosplenic ligaments. Removal of the spleen decreases the likelihood of formation of gastric varicosities, the rupture of which is followed by severe hemorrhages.

Grenet stated that this syndrome is not rare in children and that he had observed recurrence of hematemesis in spite of splenectomy. The latter should not be done if there was marked diminution in size of the spleen after administration of epinephrine.

Tiessinger had seen cases of splenomegaly with and without phlebitis and thrombosis. The occurrence of phlebitis and thrombosis of the splenic vein did not bear any etiologic relation. A primary splenothrombosis is rare. No reliance is to be placed on contraction of the spleen following the use of epinephrine.

Milian stressed the syphilitic origin of many cases and said that one should not be satisfied unless this treatment had been given a long trial. Tzanck had seen cases in which syphilis existed but said that antisiphilitic treatment had not been followed by any improvement. Chevallier agreed with Milian that syphilis plays an important part in the etiology. Typical cases of splenomegaly of the Banti type are encountered in which hematemesis was never reported yet at necropsy submucous gastric hematomas are found. The hematemesis is often due to lesions of infectious character involving the spleen, liver, stomach and radicles of the portal vein. The process may begin in the spleen or the liver. In Banti's disease with thrombosis of the portal vein and without gastric hemorrhages, splenectomy gives excellent results but they are less satisfactory when hematemesis exists. Even so, splenectomy should be given a trial in spite of occasional reports of postoperative death from gastro intestinal hemorrhage.

BERLIN

(From Our Regular Correspondent)

Nov. 8, 1937

Congress of German Neurologists and Psychiatrists

A joint congress of German neurologists and psychiatrists was held recently. The first topic for discussion was "Brain Tumors." Tonnis contrasted German and foreign data on brain surgery and pointed out the great advances that have been made in diagnosis and therapy. And yet often a diagnosis of brain tumor is not confirmed by operation. Epilepsy was next discussed. On the basis of the German eugenic laws, Pohlisch feels that the term "epilepsy" should be restricted to the hereditary disease. Phenobarbital should be prescribed only in small doses, larger doses produce an exacerbation of the epilepsy. It was the consensus with regard to the metrazol test for suspected epilepsy that in view of the nonspecific character of the induced attacks the drug should be contraindicated as a diagnostic aid.

Another principal theme was "The Use of Tests in Psychotherapy and Vocational Guidance." Enke said that most psychiatric tests may well be rejected, as they are unable to establish irrationality of the human mind. He referred to Kraepelin and his school, who elaborated the technique of mental tests. Yet if any test elucidates even a few details of the pathologic processes, it should not be rejected. The mental test may be of immediate utility within the general scheme of examination but certainly not for itself alone. Special training is necessary for the application of such tests, above all, the observations must be studied in relation to the constitutional type. Of particular importance is the Rorschach test, which helps to establish not only the working capacity but the intellectual possibilities as well. Jung's association test is too little used, it facilitates diagnosis and shortens the course of treatment. Graf spoke on the use of tests in vocational guidance. He emphasized that a test does not guarantee that the subject who shows himself experimentally qualified for a certain occupation will, in fact, be contented in it. Graf advocates a new orientation of psychology as applied to vocational guidance, the important thing is not what the person is capable of doing but what he wishes to do. The speaker referred to the significance of constitutional type psychology for vocational guidance and to the difficulties encountered in this direction, for instance, the question of how far the biologic type permits itself to be determined with certainty. Lottig discussed the value of mental tests for aviators. He said that one cannot establish all pertinent facts by tests and

that the most accurate criterion is still provided by a record of the person's achievements, by an examination of his life history.

Insulin and metrazol therapy of schizophrenia was the final theme discussed. Koppers considers that insulin shock treatment eclipses all other procedures. According to his observations only about 20 per cent of schizophrenic psychoses remain uninfluenced by insulin. There are no accidents worthy of mention if the procedure is skilfully performed. The speaker pleads for its general introduction. In the general discussion, combined insulin-metrazol therapy was rejected, the insulin therapy was almost unanimously conceded superiority. Remissions following the use of insulin were also much better than following the use of metrazol. The opposition which the utilization of insulin therapy for schizophrenia still encounters should be combated.

The German Society of Pathology

A well attended convention of the German Society of Pathology was held in September at Frankfurt-on-the-Main under the chairmanship of Beitzke of Graz. The opening theme was "Allergic Manifestations in Tissue." Professor Berger, Graz internist, differentiated allergic immunity, allergic disease and allergic reactions to vitropression. An identical reaction may be produced by wholly disparate etiologic factors: hormone, chemical, thermic, neurogenic, psychic. Schmidt of Marburg spoke on the pathogenesis of allergies. He dealt at some length with anaphylaxis and serum sickness as well as with the Sanarelli-Schwartzman phenomena. Kalbfleisch of Frankfurt-on-the-Main discussed the morphology of allergic manifestations, which he relates particularly to rheumatism, scarlatina and periarteritis. Many genuinely allergic manifestations are not macroscopically discernible, often it is not possible morphologically to demonstrate the nature of a process, namely, whether it is of allergic or of other origin.

Dietrich of Tübingen stressed the significance of allergic vascular reactions for the problem of thrombosis. Watjen of Halle discussed the question: Is there an allergic basis for the central lobular necroses of the liver frequently observed in infections, as well as in the presence of congestions, metabolic disturbances and carcinoma? The consensus among the delegates seemed to be that there is no such thing as a true morphologically specific allergic reaction and that, for example, the much discussed fibrinoid degeneration and swelling of the connective tissues may also appear in other than allergic processes. Therefore, between "simple" and allergic inflammation there exist only differences in intensity.

The main theme on the second day of the congress was "Occupational Lesions and Cancer." Staemmler of Breslau referred to the inaccuracy of statistics for conclusions relative to the incidence and seat of cancer. K. H. Bauer, Breslau surgeon, said that according to his own observations a cancerogenic substance (benzopyrene) can also act as a therapeutic agent (in skin cancer).

It was agreed in the general discussion that the influence of silicosis on the pathogenesis of pulmonary cancer should be rejected.

Erroneous Diagnoses in Poliomyelitis

Professor Opitz, director of a municipal children's hospital in Berlin, mentions the frequency with which cases of poliomyelitis are falsely diagnosed. Of fifty-four children affected with poliomyelitis, the cases of only thirty-three were correctly diagnosed at the time of admittance. It is sometimes impossible to establish the diagnosis while the disease is in its preparalytic stage. It should be emphasized, however, that in late summer poliomyelitis ought to be considered if an ailing child presents catarrhal manifestations in the upper respiratory tract, mild conjunctivitis, fever and perspiration. If in addition the patient complains of headache and backache, influenza also may be suspected. However, even at this stage sure signs of the true disorder (poliomyelitis) may be present to a certain extent,

for example, stiff neck, Kernig's sign, Brudzinski's sign, hyperesthesia, and diminution of the tendon reflex. These signs should be searched for in any event, since there are abortive cases in which the symptoms develop no further but in which the patient may be a transmitter of infection. Finally, one should keep in mind that sciatica and rheumatism are practically never encountered in children.

The Private Sickness Insurance

In addition to sickness insurance clubs that serve as public insurance underwriters there is in Germany, as elsewhere, an extensive private sickness insurance, a statistical report on which has just been published. On June 30 there were listed as belonging to the group of "private sickness insurance" 615 organizations, namely, 105 larger and 510 smaller sickness insurance clubs. The membership of these clubs on June 30 was 6,981,943 as contrasted with 6,744,460 on Dec. 31, 1936, and 6,264,968 on June 30, 1936. During the first six months of 1937 these clubs received in premiums 152,200,411 marks against 135,000,000 marks in the first half of 1936. The expenditures of the clubs during the first half of 1937 amounted to around 114,000,000 marks against around 99,000,000 marks in the first half of 1936. To still another group, the so called public service sickness insurance, belong thirty-four organizations with a membership of about 1,900,000 insured. The income of these clubs for the first six months of 1937 was 30,000,000 marks, the amount disbursed in payment of claims 25,000,000 marks.

The Alcohol Test in Traffic Accident Cases

In a recent report on the problem of alcoholism and traffic accidents, Dr. Hoffmann of the Sanitary Bureau of the Chief of Police points out how carefully the police proceed with the blood tests and how informative such tests can be. From Oct. 1, 1932 to Dec. 31, 1936, the Prussian police conducted 3,600 blood tests for alcohol. The Widmark method was followed. The published report discloses that the greatest danger of a traffic accident was present on Saturday (20.4 per cent of all accidents occurred on Saturdays) and on Sunday (17.5 per cent of all accidents occurred on Sundays). In 67 per cent of the cases the blood specimen was removed between 7 p. m. and 5 a. m. The greatest number of traffic offenders were from 30 to 34 years of age. Nineteen women, eight of them married, had to be booked for driving while intoxicated.

ITALY

(From Our Regular Correspondent)

Nov. 30, 1937

Synthetic Camphor in Italy

Synthetic camphor was recently placed among the drugs in the Italian official pharmacopeia. The General Department of Public Health sent a circular letter to municipal physicians and pharmacists which contains precise regulations. Jars containing camphor of several varieties in drug stores shall have a label showing, specifically, the quality of camphor contained in it. Pharmacists will fill prescriptions which call for camphor with the pure article unless otherwise specified. Labels on pharmaceutical products containing camphor should denote the nature of the camphor, whether synthetic, natural or Japanese.

Balneario Donated to University

Dr. Eugenio Viviani donated the largest part (six sevenths) of the Salice balneario to the Milan University. The donation includes the balneario, springs, hotels and parks. This is the first time an Italian university was ever presented with a balneario of such great value. The Salice springs have waters containing sulfur, sodium chloride, bromides and iodides. The balneario is to be reorganized. There will be departments for research, teaching and clinical work.

Mortality in Italy

According to statistical data, the mortality in Italy diminished from 1919 to 1936. The annual average for the years 1919 to 1921 was 666,771 for the entire population of the country, which corresponds to 18.3 per thousand of population. From 1931 to 1936 it was 590,291, which corresponds to 14.1 per thousand of population. The annual average stillbirth rate was 4.5 per hundred births from 1919 to 1921. It was 3.4 per hundred from 1931 to 1936. Infant mortality was 129.4 per thousand from 1919 to 1921 and 104.1 from 1931 to 1936.

Society Reunion

The Società di Dermatologia e Sifilografia met recently at Palermo under the chairmanship of Professor Tommasi, the head of the clinic of the Palermo University.

Professor Marchionni spoke on the pathologic chemistry of seborrhea. A seborrheic constitution is necessary for the development of seborrheic eczema. The speaker, in collaboration with Manz, made determinations of the amount of total cholesterol and of the two fractions of cholesterol in chloroformic dialysates of normal skin of patients suffering from seborrhea. The amount of total cholesterol in the superficial layers of the skin of patients suffering from oily seborrhea is increased in comparison to that in the skin of normal persons and the cellular fats contain a large amount of ether. The disorders of the fat metabolism of the skin in seborrhea originate in increased production of cellular fats, which contain a large amount of ether, in the horny layer of the skin. In acne vulgaris the amount of free cholesterol is increased, owing to the accelerated secretion of the sebaceous glands.

Professors Monacelli and Puglisi reported a case of Bowen's disease in which clinical and microscopic studies were performed. A woman, aged 34, suffered from the disease for seven years. The disease involved the vulvar mucosa and coexisted with lichen planus of the mucosae of the mouth and genitalia. Microscopic studies of tissues from the vulvar lesion showed the typical structure of Bowen's disease, which developed from local recurrences of lichen planus.

Professors Bosco and Berna reported studies of the reticulo-endothelial system of lepers which were carried on by Remann and Adler's Congo red test. The granulopoietic power is reduced in lepers. The leprosy nodules do not retain the stain.

Professor Puglisi studied, by means of pharmacodynamic tests, the behavior of the neuro-endocrine apparatus of patients who were suffering from vitiligo and alopecia areata. The two conditions have the same origin. They develop from local vasoconstriction, which is intensified by the presence of hyper-sympathetotonia.

BUDAPEST

(From Our Regular Correspondent)

Nov. 9, 1937

Centennial Jubilee of the Budapest Royal Medical Society

The Budapest Royal Medical Society celebrated its centennial in the gala hall of the Hungarian Scientific Academy on October 7-10. The ceremony was attended by the prime minister, by the ministers of public instruction and interior, by the mayor of the city and by delegates from foreign medical and scientific societies. The opening address was given by Professor Verebelyi, after which Professor Eiselsberg, Vienna, professor of surgery, lectured on "Dramage and Tamponade." After the lecture, Professor Verebelyi handed to the Austrian guest a silver medal struck off for the occasion. Among the foreign delegates were Professor Kubik on behalf of the German university of Prague, Professor Wadi of the Medical Association of Esthonia, Professor Lubeck of the Medical Chamber of Esthonia, Mustakallio of the Finnish Medical Association, Copeman of the Royal College of Physicians, London, van Kapellen of the Netherlands Medical Society, Kahlmeter of the Swedish Medical Society and Koleszar of

the Transalbanian Museum Association. In the afternoon Professor Staehelin of the Basel (Switzerland) University lectured on "The Change in Diseases in the Latter Decades." From statistics relating to the distribution of various infectious diseases he concludes that phenomena which are strikingly divergent from one another are caused only by external circumstances. On the second day of the meeting a wreath was placed on the statue of Semmelweis and a memorial address was given by Professor Frigyesi of Budapest University. In the afternoon Prof. C. C. Guthrie of the University of Pittsburgh School of Medicine lectured on "Cancer of the Breast and the Results Achieved." In the evening, the city of Budapest entertained at a gala dinner. On the third day Professor Lepine, dean of the Lyons (France) University, read a paper on "Chemical Influences in Neurology." A gala performance of the Budapest Royal Opera and then a banquet by the Hungarian government ended the festivities.

Professor Szent-Gyorgyi

Those who have followed the activity of Professor Szent-Gyorgyi for years were not greatly surprised at his award of the Nobel prize. The young scientist commenced his research on the function of the adrenal gland in a basement laboratory of a university in the Netherlands. After indefatigable work at various other research centers over a period of several years he isolated vitamin C.

Professor Szent-Gyorgyi was born at Budapest, Sept. 15, 1893. His father was the descendant of a Transylvanian nobleman and his mother is the daughter of the late Professor Lenhossék, a physician whose sons are prominent in the Hungarian scientific world. After graduating at Budapest University, Szent-Gyorgyi studied at Bratislava and later at Prague, Berlin and various English and American universities. Since 1930 he has occupied the chair of biochemistry at the Francis Joseph University in Szeged. Eleven years ago while at a university in the Netherlands he conceived the idea that the function of the adrenals must be in connection with the respiration of tissues. From this he went into a study of the respiration of plants, and he discovered in plants a substance which gave rise to peculiar chemical processes. His publications in the medical press by that time had made him well known and the University of Cambridge offered its laboratory for him to use. There he had ample means to pursue his research. He was able to crystallize the mysterious substance from the adrenals and different plants. Then he received an invitation to the United States, where a finely equipped laboratory was placed at his disposal and here he was able to produce 20 Gm. of the problematic substance from the adrenals and plants, yet he still did not know what the substance was, much work was necessary to establish that the 20 Gm. of material which he brought from America to Szeged was vitamin C. Szent-Gyorgyi endeavored to produce from plants a greater quantity of this substance and mere chance played a part. At a certain dinner he did not relish green paprika, which he was accustomed to eat every day before meals, and he put it aside. He recalled that, among the long series of fruits, vegetables and plants which had been investigated in his laboratory in search of Vitamin C, green paprika was not included, so he took the rejected dinner portion to his laboratory and worked the whole night, discovering that green paprika, this popular and cheap vegetable, contains much vitamin C. It was not difficult now to make a large quantity of vitamin C, and shortly he was able to send quantities of it to biochemical laboratories in Europe and the United States as a present. Vitamin C is present in every constituent of the animal cell and it must therefore play a fundamental part in nature.

LACK OF VITAMIN RESULTING FROM ILLNESS

In a recent issue of the *Orthoskepsis* (Postgraduate Medical Education) Szent-Gyorgyi says that the vitamin demand of various organs is not uniform nor is it uniform in one and

the same person under different circumstances. Research has led to the observation that the vitamin C demand of a feverish patient is considerably higher than that of a normal person. Therefore it may come about that, while a patient is on a seemingly satisfactory diet, a lack of vitamin may arise and render his condition worse.

Purpura haemorrhagica of the vascular type may be cured with a certain botanical dye. These dyes, called botanical flavons, have been also named P vitamins. However, the diet of a patient suffering from purpura often does not differ at all from the diet of other persons living in the midst of similar circumstances. The question arises: Why did this one person fall ill with purpura? The answer is: Because his organism had an exaggerated demand, unsatisfied by regular diet, for this substance. Perhaps it is unable to bind the P vitamin taken in with foods. Such an organism can be brought into equilibrium only with a great excess of P vitamin. We encounter cases also in the therapeutic employment of vitamin C that can be explained only on this theory.

JAPAN

(From Our Regular Correspondent)

Oct. 25, 1937

Extensive Outbreak of Dysentery

The number of the cases of dysentery which suddenly broke out on the evening of September 25 in the city of Omuta, with a population of over 110,000, amounted to 11,272 by October 18, with 491 deaths. Seventy per cent of the patients were children. It broke out in the houses where the water is supplied by the city waterworks. As to the cause, it was recently found that in the family of the superintendent of the watershed had been cases of the same disease. There are only forty practitioners in the city, and 114 doctors from medical colleges and hospitals in larger cities have been sent to assist, and two or three doctors from the neighboring towns and cities are being sent every day by turns to help them. Some of the primary school buildings are being used as hospitals. The society of pharmacists of the prefecture voluntarily sends two pharmacists every day to assist in the preparation of medicine. The central government sent health officials, who are assisting. One of the most difficult questions was how to deal with the excrement of each sick family. The farmers became afraid to haul the excrement to their farms and refused to do as before. The city authorities decided to haul it to the seashore to be burned. The epidemic is now rapidly subsiding.

Health Benefit Societies

In April 1922, when severe business depression resulted from the great war, a consumers' association in a highland district established for the first time a medical department as a means of relieving the union of the heavy burden of medical treatment of its farmer members. The following month another union was founded. These are said to have been the first health benefit groups in this country. At that time hardly any attention was given to it, but it has become a menace to all medical men today. Now the Department of Agriculture and Forestry has put its hand to the establishment of "health benefits," with the powerful aid of the Central Association of the Japan Industrial Guild. Notwithstanding the strong opposition by the medical associations central and local, it has grown rapidly. There were in 1932 only twenty-six health benefit societies, in 1935 there were ninety-one. At the end of November 1936 the number amounted to 805. The unions are found in eighteen cities, 356 towns, 1,548 villages, and forty hamlets, and the number of members exceeds 500,000. At the same time public institutions, great industries, mines and large manufacturers show a tendency to establish a medical office of their own for their workers. The practitioners here are also going to be excluded. The graduates of medical colleges, of

late, seem to prefer to be panel doctors, perhaps thinking it a safe way to make a living. The college authorities are eager to send their graduates to new districts as panel doctors. They encourage the town authorities to form a new union, thus helping to increase the health benefit unions. The Japan Industrial Guild, the most powerful association of this kind, has much capital and influence over all the farm villages. It has recently made public a three year plan of expansion of the health benefit societies all over the country. The guild is said to oppose the plan of the government in dealing with medical matters.

Movement to Encourage Use of Domestic Medical Supplies

The Home Office, soon after the outbreak of the Sino-Japanese conflict, held a meeting to encourage the use of home-made medical articles, summoning all the chief manufacturers of medicine or "patent" medicine. One of the chief aims was to have a continuous supply of all kinds of medicine and to prevent a sudden rise in price, even if the foreign supply might have to be stopped. There was to be made a list of all available medicine, distributed far and wide among the practitioners. The list also shows the comparative effect of home-made medicines and the foreign products. In 1935 the home-made medicines and articles amounted to the sum of 140,000,000 yen, which showed rapid progress in this industry. On the other hand, the imported medicines and articles in that year amounted to 20,000,000 yen. It has almost been settled how to substitute home-made articles for foreign ones. This movement is to include dental medicines and articles. The dental association of Japan has long been engaged, under the guidance of the Home Office, in the supply of genuine home-made articles. With two or three exceptions, almost all the articles now in use by the dentists here are home-made ones.

Number of Dentists and Pharmacists

According to an investigation made in December 1935 the number of dentists was 21,067, while in the previous year there were 20,080. There were 274 dentists to 10,000 of the population. The pharmacists amounted to 26,732, and this is an increase of 1,775 when compared with the previous year. Each 10,000 of the population has 380 pharmacists, of whom 3,009 are working in the hospitals or clinics, while 1,683 are engaged in selling medicine.

Death of Dr Ikeda

Dr Yoichi Ikeda, one of the most prominent gynecologists, died at the age of 80, September 8, at Fukuoka in the house of his eldest son, Dr Kazuo Ikeda, who is a surgeon. He was born in Saga in 1859 and graduated from the Tokyo Imperial University in 1883. He was well versed in German. The Japan Gynecologic Society owes its foundation in 1902 to him.

Marriages

- EUGENE FLYNN, Corpus Christi, Texas to Miss Birdie Kenny of Galway, Ireland, in Dublin, Ireland, July 3.
FRANK ELMORE WILSON, Mooresville, N. C., to Miss Esthier Coleman Hambley, at Salisbury, in November.
RALPH M. LAUGHLIN, Tipton, Iowa, to Miss Geraldine O'Neil of Milwaukee, in Clinton, Iowa November 8.
JAMES E. WHITMIRE, Sumner, Iowa, to Mrs. Virginia Amsden Goen of Manchester, November 13.
CLAYTON L. INGWELL, Deerfield Wis., to Miss Fern Frances Nieland of Madison, November 11.
ALVIN O. HENDRICKSON, Fairchild, Wis., to Miss Maxine Hartwig of Madison, October 30.
LEWIS GRANT JACOBS to Miss Catherine Feeney, both of Madison, Wis., October 30.
ALDEN F. RISSER, Stewartville, Minn., to Miss Marion Fran of Minneapolis, October 9.

Deaths

Arthur Davenport Black * Chicago, Northwestern University Dental School, Chicago, 1900, Northwestern University Medical School, Chicago, 1901, for twenty years dean of the Northwestern Dental School, and a member of the faculty since 1900, as professor of oral surgery, operative dentistry and oral pathology, a director of the Chicago Tuberculosis Institute, fellow of the American College of Surgeons, was an honorary member of scientific societies in America and abroad, including the Royal Society of Medicine of England, the German Academy of Natural Sciences and the Swedish Dental Society, past president of the Illinois State Dental Society, the American Institute of Dental Teachers and the International Association for Dental Research and served for several years on the National Research Council, in 1933 president of the Chicago Centennial Dental Congress, during the World War was advisor to the Surgeon General of the Army, in Washington, for twelve years served on the staff of St. Luke's Hospital, was the author of the "Index of Periodical Dental Literature," consisting of thirteen volumes, author and editor of four volumes of G. V. Black's work on "Operative Dentistry", aged 67, died, December 7, in the Swedish Covenant Hospital, of myelogenous leukemia

Francis A. Long * Madison, Neb., State University of Iowa College of Medicine, Iowa City, 1882, member of the House of Delegates of the American Medical Association, 1907, 1908 and 1911, president of the Nebraska State Medical Association, 1906-1907, one of the founders, past president and secretary of the Elkhorn Valley Medical Society, fellow of the American College of Surgeons, surgeon to the Union Pacific Railroad, served continuously since 1916 as chairman of the publication board and since 1920 editor of the *Nebraska State Medical Journal*, aged 78, died, November 24, of coronary thrombosis, chronic myocarditis and nephritis

John Woodford Farlow * Boston, Harvard University Medical School, Boston, 1877, for many years instructor in laryngology at his alma mater, past president of the American Laryngological Association, and the Medical Library Association, at various times associated with the Carney Hospital, Boston City Hospital, Free Hospital for Consumptives and the Boston Dispensary, formerly librarian of the Boston Medical Library, aged 84, died, September 24, at his summer home in Manchester

William Warren Hildreth, New York, Columbia University College of Physicians and Surgeons, New York, 1910, member of the Medical Society of the State of New York, fellow of the American College of Surgeons, associate clinical professor of obstetrics at his alma mater, on the staffs of the Sloane Hospital for Women, New York, Nassau Hospital, Mineola, and the Tarrytown (N. Y.) Hospital, aged 53, died, October 18, of cerebral hemorrhage

Edgar Raymond Hiatt * Troy, Ohio, Indiana University School of Medicine, Indianapolis, 1916, past president of the Ohio Public Health Association, city and county health officer, and formerly health officer of the City of Logan and of Hocking County served during the World War, aged 49, died, October 12, in the Stouder Memorial Hospital, of pernicious anemia and disease of the gallbladder

John Ernest Greiwe * Cincinnati, Medical College of Ohio, Cincinnati, 1889, formerly adjunct professor of medicine and lecturer on physical diagnosis at his alma mater, past president of the Cincinnati Academy of Medicine, fellow of the American College of Physicians, aged 72, died, October 28, in the Good Samaritan Hospital, of cerebral thrombosis

Frank John Colgan, Rochester, N. Y., University of Michigan Homeopathic Medical School, Ann Arbor, 1910, member of the Medical Society of the State of New York, served during the World War, member of the city health department, on the staffs of the Highland and Genesee hospitals, aged 49, died, October 12, of coronary thrombosis

Harry Adler * Baltimore, University of Maryland School of Medicine, Baltimore, 1895, formerly director of the clinical laboratory, associate professor of gastroenterology, professor of therapeutics and professor of clinical medicine at his alma mater, on the staff of the Sinai Hospital, aged 65, died, November 1, of heart disease

Ludwig Frederick Hooge * Chicago, Chicago Homeopathic Medical College, 1889, College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1903, aged 73, on the staff of the South Shore Hospital, where he died, October 7, of coronary thrombosis

Charles Frederick Friend, Chicago, Hering Medical College, Chicago, 1895, member of the Illinois State Medical Society, formerly a medical missionary in Africa, on the staff of the Evangelical Hospital, aged 72, died, October 2, of carcinoma of the gallbladder and acute pancreatitis

Yepros Martin Doodokyan, Chicago, College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1908, member of the Illinois State Medical Society, aged 62, died, October 16, of mitral insufficiency, chronic nephritis and arteriosclerosis

Jack Martin Estes, Abilene, Texas, University of Texas School of Medicine, Galveston, 1899, member of the State Medical Association of Texas, aged 63, was killed, October 10, near San Fernando, Calif., when struck by an automobile

John H. Drach, Cockeysville, Md., University of Maryland School of Medicine, 1880, member of the Medical and Chirurgical Faculty of Maryland, aged 77, died, September 11, in the Maryland General Hospital, Baltimore

Thomas H. McCann, Portsmouth, Ohio, Kentucky School of Medicine, Louisville, 1894, member of the Ohio State Medical Association, formerly member of the city council, aged 73, died, September 3, at Minford

John Thomas Peery, Corcoran, Calif., University of Southern California College of Medicine, Los Angeles, 1906, member of the California Medical Association, aged 61, died in September

James Manuel Johnson * McLeansboro, Ill., University of Illinois College of Medicine, Chicago, 1930, aged 35, died, September 24, in the Barnes Hospital, St. Louis, of infantile paralysis

George Joseph Moser, New York, University of the City of New York Medical Department, 1878, member of the Medical Society of the State of New York, died, September 26

Alfred Abraham Citrynell, Governors Island, N. Y., Emory University School of Medicine, Atlanta, 1933, on the staff of the Station Hospital, aged 37, died, September 14

John William Berryman, Scottville, Ill., Keokuk (Ia.) Medical College, College of Physicians and Surgeons, 1902, aged 77, died, October 17, of carcinoma of the stomach

James Enoch Vogan, Youngstown, Ohio, Western Pennsylvania Medical College, Pittsburgh, 1891, aged 76, died, September 24, of pneumonia, following an operation

Samuel Wilson, Yatesville, Ga., University of Georgia Medical Department, Augusta, 1891, member of the Medical Association of Georgia, aged 71, died, September 28

John Henry Brett * Cleveland, Western Reserve University Medical Department, Cleveland, 1904, chief surgeon at the Woman's Hospital, aged 54, died, September 2

Cullen O. Thomas, Worthington, Mo., Central Medical College of St. Joseph, Mo., 1903, member of the Missouri State Medical Association, aged 60, died, September 9

Jacob Haas, New York, Eclectic Medical College of the City of New York, 1903, member of the Medical Society of the State of New York, died, September 23

Gustave E. F. Anderson, Los Angeles, Rush Medical College, Chicago, 1893, formerly member of the city board of education, aged 74, died, September 17

John Shepherd Eastland, Judsonia, Ark., Philadelphia University of Medicine and Surgery, 1870, Civil War veteran, aged 92, died, October 8, of senility

George Albert McDonald, Fairfield, Ill., Hahnemann Medical College and Hospital, Chicago, 1895, aged 72, died, September 28, of acute endocarditis

Dennis L. Hill * Wickham, W. Va., Chicago Medical School, 1920, mayor of Mabscott, aged 47, died, September 19, in a hospital at Beckley

Peter H. Fitzgerald, Woodburn, Ore., Willamette University Medical Department, Salem, 1886, aged 79, died, September 14

Samuel Milton Humphreys, Columbus, Ohio, Ohio Medical University, Columbus, 1900, aged 62, died, October 29

Claes William Johnson, Claremont, Calif., Rush Medical College, Chicago, 1880, aged 81, died suddenly, October 9

James Henry Turner, Brooklyn, College of Physicians and Surgeons of Chicago, 1891, aged 79, died, September 24

J. W. Wisely, Kalamazoo, Mich., Chicago Homeopathic Medical College, 1887, aged 80, died, September 19

Henry Fidler * New York, Long Island College Hospital, Brooklyn, 1907, aged 61, died, October 1

Bureau of Investigation

MISBRANDED "PATENT MEDICINES"

Abstracts of Notices of Judgment Issued by the Food and Drug Administration of the United States Department of Agriculture

[EDITORIAL NOTE The abstracts that follow are given in the briefest possible form (1) the name of the product, (2) the name of the manufacturer, shipper or consigner, (3) the composition, (4) the type of nostrum, (5) the reason for the charge of misbranding, and (6) the date of issuance of the Notice of Judgment—which may be considerably later than the date of the seizure of the product]

Table Gee Valuable Elements of Milk—Table Food Concentrates Inc. Chicago Composition not given. Fraudulently represented as a palatable food containing extra milk units for growth in the young and for tissue repair in both young and old aiding digestion and elimination.—[N J 26487 May 1937]

Epsolin—Union Products Co. New York. Falsely represented as producing certain physiological effects through the action of epsom salt whereas these were due to the phenolphthalein and aloin present.—[N J 26488 May 1937]

Four Leaf Clovers—Pilgrim Co. Chicago Composition Essentially boric acid borax starch and a pink coloring matter. Fraudulently represented as a remedy for female disorders including leukorrhea and as an antiseptic.—[N J 26499 May 1937]

Mentos—Mentos Products Inc. Philadelphia Composition Essentially sulfur borax ammonia and water with small amounts of perfume. Fraudulently represented to grow hair stop dandruff and scalp disorders eczema sores etc.—[N J 26500 May 1937]

Italina Effervescent Salts—F. Bonomo & Co. Trieste Importing Co., and Louis Lapone New York Composition Essentially phenolphthalein baking soda tartaric acid citric acid and sugar flavored with lemon oil. Misbranded in being falsely represented as consisting wholly of effervescent salts and a lemon product and fraudulently represented as a remedy for stomach troubles excesses in eating and drinking etc.—[N J 26505 May 1937]

Owl Elixir Iron Quinine and Strychnine—United Drug Co. and Owl Drug Co. San Francisco Composition A liquid containing quinine sulfate flavored with orange. Fraudulently represented as an effective treatment for wasting diseases malaria, etc.—[N J 26504 May 1937]

Mineral Life—Mineral Life Laboratories Inc. Des Moines Composition Essentially sulfur dioxide (0.1 per cent) sulfuric acid (0.04 per cent) salts of sodium potassium calcium magnesium manganese iron copper (0.1 per cent) and water (approximately 99.75 per cent). For inflammation ulcerations catarrh sinus trouble etc. Fraudulent therapeutic claims.—[N J 26508 May 1937]

Universal Tonic Ginseng—J. I. Van Cleave trading as Universal Medicine Co. Portland Ore. Composition Essentially extracts of plant drugs alcohol (27 per cent by volume) glycerin and water. Fraudulently represented as a remedy for stomach liver kidney and nervous disorders.—[N J 26510 May 1937]

Syl Way—Health Foundation of California Los Angeles Composition Essentially dried yeast dried milk cane sugar corn starch cereal germ and ground seeds resembling psyllium. For colitis malnutrition etc. Fraudulent therapeutic claims.—[N J 26515 May 1937]

Vegetate Formula BF 1 (Tablets)—Health Foundation of California Los Angeles Composition Essentially rice bran dried okra seaweed cinnamon cranberry and leaf tissue including a small amount of alfalfa leaf. Fraudulently represented as a remedy for hyperacidity bloating etc.—[N J 26513 May 1937]

Vegetate broth—Health Foundation of California Los Angeles Composition Essentially dried yeast dried alfalfa onion tomato cereal flour red pepper celery seed okra and common salt. Fraudulently represented as a mineral broth scientifically compounded to retain valuable minerals which 'Brings you life anew'.—[N J 26515 May 1937]

Milam Herb Compound—Milam Inc. Charlotte N. C. Composition Essentially extracts of plant drugs including a laxative and small proportions of nitric and salicylic acids. For impure impoverished or acid blood all run down and depleted conditions. Fraudulent therapeutic claims.—[N J 26516 May 1937]

Tricasco—Tricasco Laboratories Chicago Composition Essentially water sugar and extracts of plant drugs including licorice. Fraudulently represented as a remedy for gallstone weak eyes gravel tuberculosis pneumonia arthritis and many other disorders.—[N J 26521 May 1937]

Lees (L. G. C.) Herbal Compound—Eric Laboratories Cleveland Adulterated in falling below the professed standard or quality represented as it contained no potassium iodide iron iodide or significant amounts of iron peptonate or sodium salicylate. Misbranded because alcohol content was not declared on the label fraudulently represented as a remedy for skin liver and blood disorders arthritis fevers etc.—[N J 2652 May 1937]

Ward's Vitamized Tonic Tablets—Savoy Drug & Chemical Co. Chicago Adulterated in that the strength and purity fell below the standard of vitamin units declared misbranded because of false and misleading claims.—[N J 26524 May 1937]

Bromo Foam—Chancey A. Jones trading as the Bromo-Foam Co., Tiffin Ohio Composition Essentially baking soda (65 per cent), common salt (3.87 per cent) sodium salicylate (3.44 per cent), sodium bromide (2.90 per cent) caffeine (0.51 per cent) and citric acid flavored with peppermint oil. Fraudulently represented as a cure for indigestion headache stomach disorders etc.—[N J 26951 July 1937]

Eczematone—Barlow Chemical Association Oklahoma City Composition Essentially corrosive sublimate a trace of boric acid alcohol (84 per cent by volume) and water. For scalp disease eczema acne dandruff falling hair etc. Fraudulent therapeutic claims.—[N J 26952 July 1937]

Eczematone Ointment—Barlow Chemical Association Oklahoma City Composition Essentially mercury and a mercury compound in an ointment base. Fraudulently represented as a remedy for eczema scrofula, and all other skin disorders.—[N J 26957 July 1937]

Curarina De Juan Salas Nieto—Richard Diener trading as Curarina Agency Oxnard Calif. Composition Essentially a water alcohol solution of drug extractives containing about 34 per cent of alcohol by volume with traces of resin saponin like glucosides and alkaloids. Fraudulently represented as a cure for disorders of the blood and heart, scatica, rheumatism malaria diabetes, typhoid fever smallpox etc.—[N J 26959 July 1937]

Dexene—Sanosapor Laboratories Huntington W. Va. Composition Essentially water (99.34 per cent) and sulfur dioxide (1/4 of 1 per cent). Fraudulently represented as an effective treatment for diabetes in conjunction with a recommended diet.—[N J 26960 July 1937]

N. A. No. 7—N. A. Co. Laurel Miss Composition Essentially a solution of epsom salt iron sulfate water and small amounts of calcium manganese aluminum and phosphate. For indigestion rheumatism kidney disorders etc. Not a germicide as represented. Fraudulent therapeutic claims.—[N J 26976 July 1937]

N. A. No. 7 1/2—N. A. Co. Laurel Miss Composition Essentially epsom salt iron sulfate water and small amounts of quinine aluminum phosphate and chloride. Fraudulently represented as a remedy for stomach, liver and kidney disorders malaria etc.—[N J 26976 July 1937]

Runners Combined Eczema Lotion—Earle Chemical Co. Wheeling W. Va. Composition Essentially water alcohol glycerin and boric acid with small amounts of carbolic and salicylic acids and wintergreen. Fraudulently represented as a remedy for eczema scalp disorders itchy and oak poisoning etc.—[N J 26977 July 1937]

Beck's Little Wonder Headache Powders—A. L. Beck Sharon Pa. Composition Essentially acetaminol (4 1/2 grains per powder) caffeine and potassium citrate. Fraudulent representations.—[N J 26979 July 1937]

Ruherb—Keystone Laboratories Inc. Memphis Tenn. Composition Chiefly water sugar epsom salt alcohol small amounts of salicylic acid and plant extractives including emodin arbutin and a trace of alkaloids. Fraudulently represented as a health, blood and nerve tonic, and a cure for indigestion kidney and liver disorders etc.—[N J 26982 July 1937]

Keystone Kidney Bladder Rheumatism Liver and Backache Remedy—Keystone Laboratories Inc. Memphis Tenn. Composition Chiefly water sugar alcohol small amounts of potassium acetate methenamine juniper oil benzoic acid and plant extractives. Fraudulent therapeutic claims.—[N J 26982 July 1937]

Keystone White Pine Compound Expectorant—Keystone Laboratories Inc. Memphis Tenn. Composition Chiefly sugar water, alcohol plant extractives and chloroform. Fraudulently represented as a cure for coughs and bronchial affections.—[N J 26982 July 1937]

Keystone Antiseptic Healing Oil Liniment—Keystone Laboratories Inc. Memphis Tenn. Composition Essentially small amounts of ammonia water turpentine oil and camphoraceous material a fixed oil and water. Fraudulent therapeutic claims.—[N J 26982 July 1937]

Sphinx Herb Tea (Formerly Munk's System Purifier)—Argyle Laboratories New York Composition Essentially senna leaves and pods with small amounts of fennel and anise seeds elder flowers buckthorn bark dog grass orange peel ginger root and safflowers. Fraudulently represented as a remedy for blood poisoning colitis dizziness etc.—[N J 26990 July 1937]

Vagil Anti Septikones—Eric Laboratories and Mrs. Bee's Health Laboratories Cleveland Composition Suppositories containing hydroxyquinoline in cocoa butter. Fraudulently represented as a remedy for leukorrhea.—[N J 26984 July 1937]

Henry's Deep Rock Oil—Henry Evans Washington D. C. Composition Essentially a petroleum oil a tar oil such as cade, with wintergreen turpentine and oil of cadeput. For pain kidney and bladder disorders asthma rheumatism weak lungs etc. Fraudulent therapeutic claims.—[N J 26985 July 1937]

Gay—Strong Cobb & Co. Inc. Cleveland Composition In each tablet 21 grains of acetylsalicylic acid 17 grains of phenacetin 0.25 grain of caffeine and plant material including viburnum. Fraudulently represented as a prompt relief for menstrual pain and as containing no harmful drugs.—[N J 26987 July 1937]

Rawleigh's Nasal Relief—W T Rawleigh Co, Freeport Ill Composition Essentially menthol camphor and chlorbutanol Fraudulently represented as a remedy for nasal catarrh, hay fever, etc—[N J 26991 July 1937]

Mido—General Drug Co New York Composition In each tablet essentially 49 grains of aminopyrine and 0.4 grain of caffeine Fraudulently represented as a harmless remedy for menstrual pain headache and neuralgia—[N J 26992 July 1937]

Astypodyne Ointment—Astypodyne Chemical Co, Wilmington N C Composition Pine oil (12 per cent) in petrolatum Fraudulently represented as a remedy for hemorrhoids—[N J 26993 July 1937]

Stoco for Colds—Stowe Co Charlotte N C Composition Essentially acetanilid (5 grains per fluid ounce) alcohol caffeine, phenol phthalein salicylates ammonium chloride menthol sugar water flavoring oils emodin bearing drugs and plant extractives including licorice Fraudulent therapeutic claims—[N J 26994 July 1937]

Grams (Dr) Grandmother Medicine—Grams Medicine Co Cuyahoga Falls Ohio Composition Essentially powdered plant material containing aloë an emodin bearing drug and ginger For all blood liver kidney and stomach diseases, diabetes, cancer, etc Fraudulent therapeutic claims—[N J 26999 July 1937]

Correspondence

THE SEASONAL INCIDENCE OF ACUTE CORONARY OCCLUSION

To the Editor—A communication from Dr Paul D Rosahn (THE JOURNAL, October 16, p 1294) analyzed statistically the data on the seasonal incidence of acute coronary artery occlusion presented by Drs Dack, Jaffe and myself in an article entitled "Factors and Events Associated with the Onset of Coronary Artery Thrombosis" in THE JOURNAL, August 21. We divided the seasons into autumn-winter (October to March inclusive) and spring-summer (April to September inclusive). The difference in the incidence of coronary artery occlusion in these two groups was only 2.6 per cent. Dr Rosahn states that "when, however, a slightly different division of the published data is made, a wholly different conclusion results"

Monthly Mean Temperature, New York City

	1930	1931	1932	1933	1934	1935	Average
January	33.5	33	43	40	34.5	29	35.0
February	37	34	36	34	20	31.5	32
March	40	40.5	37	35	37	43	39
April	47.5	40.5	48.5	50	49.5	49.5	49
May	62.5	60.5	61	63	62.5	59	61.5
June	72	69.5	60	71	72.5	68.5	70.5
July	70	76.5	74	73.5	76	76	75
August	73	74.5	75	74	70.5	73.5	73.5
September	71	71	67.5	69	65	64	68.5
October	60	60.5	57.5	56	54	57	56.5
November	46	51.5	43.5	42	45	48.5	46.5
December	35	40.5	50	33	33.5	30.5	35

This slightly different division" consists of winter-spring (December to May inclusive) and summer-autumn (June to November inclusive). Dr Rosahn pointed out that when this is done the difference in incidence becomes 8.8 per cent which may be significant from a statistical standpoint. However, this grouping is not, in our opinion, quite relevant to the problem of the influence of cold weather in New York City. We could not present, within the space limits of our original communication, data on the monthly mean temperature for New York for the years 1930-1935, published by the U S Department of Agriculture, Weather Bureau, Publication 1030, reproduced herewith. On the basis of these data, our grouping includes the five coldest months of the year. Dr Rosahn's arrangement, on the other hand, combines only four of the coldest months. Furthermore, it includes May and omits November in the "cold" season group, although the mean temperature of May was 61.5 F, while that of November was 46.5 F. It is thus

apparent that, with regard to cold, our grouping is the logical one. Dr Rosahn was not aware, of course, of the temperature data.

Dr Rosahn considers statistically significant the high incidence of attacks in January. We have had the invaluable assistance of Alfred J Lotka, the assistant statistician of the Metropolitan Life Insurance Company, who believes that there is some justification in Dr Rosahn's conclusion. However, several facts point to the correctness of our previous conclusion that coronary artery occlusion occurs irrespective of season or temperature. Thus it will be noted that the coldest month of the year, February, had next to the lowest incidence of attacks. Furthermore, in 237 additional cases observed since the original data presented were collected the highest incidence was in March, the third coldest month of the year. On the other hand, February, the coldest month, had an incidence only slightly more than half that of March.

It is obvious that a much larger series of cases will have to be studied to determine conclusively the influence of temperature on coronary occlusion and the significance of the increased incidence in January obtained in our original series. The relation of cold to angina pectoris has been erroneously applied, we believe, to coronary artery occlusion. In any case it is probable that the conclusions of previous writers, such as Wood and Hadley, who found that 87 per cent of attacks occurred in winter and only 13 per cent in summer, are unjustified.

We hope in the future to present the problem of the influence of weather and temperature on coronary artery occlusion in greater detail.

ARTHUR M MASTER, M D, New York

RESUSCITATION

To the Editor—In THE JOURNAL, November 6, Prof Yandell Henderson discusses resuscitation of the new-born, particularly as it applies to the E & J resuscitator. With no attempt to question in any way the background of facts on which Professor Henderson draws his conclusions, it seems fair to point out that much of the argument used by him to sustain his thesis is hardly germane to the conclusions he draws.

At least one source of conflict rests on an improper use of terms. To speak of resuscitation in the new-born is a misnomer, when one is considering the initiation of respiration in an organism that has never breathed. Asphyxia neonatorum and asphyxia due to carbon monoxide gas are two different conditions, and the approach to the treatment of one may not be the approach to the treatment of the other. The attempt to apply to the problems inherent in the former the therapeutic principles applicable to the latter in appraising any type of resuscitator, is misleading and incorrect.

The reports of the commissions which Professor Henderson mentioned were concerned with shock and asphyxia due to gases. It is hardly to be supposed that the valuable observations of these commissions could be logically carried to the point of applying to an instrument designed to initiate respiration in an infant that had never breathed. Few who have interested themselves in the problem will disagree with Professor Henderson's conclusions that an instrument of this kind is irrational in asphyxia neonatorum, but there are many who with justification will disagree that the answer has been found in the Meltzer-Flagg technic. To many the procedure of inflating the infant lung as one would a balloon is abhorrent on both anatomic and physiologic bases. It is to be suspected that this first effort which opens the door to extra uterine life has implications more subtle than a bicycle tire. In the present state of disagreement it would seem premature to put the final stamp of approval on one method or another. If we are to believe the excellent studies reported in the November issue of *Surgery, Gynecology and Obstetrics* by Wilson, Torrey and Johnson

there is compelling experimental evidence that forceful inflation of the infant lung even when done under extreme control is not only useless but as unsound physiologically and harmful anatomically as any respirator or pulmotor. It would be interesting and instructive to see more work done on this subject and meanwhile adhere to conservative measures that are known to be free from danger.

J LYMAN HURLBUT, M.D., Mount Kisco, N. Y.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

DIAGNOSIS OF FEVER AND ABDOMINAL PAIN IN BOY

To the Editor—A boy aged 10 years had some indigestion for four or five months that did not respond well to the usual alkaline treatment. Pain was made worse by taking of rich sauces, pickles and potatoes or preserved fruit in large quantities. Four weeks ago pain developed over most of the abdomen but especially the upper part. He complained of pain also in the lower part of the chest anteriorly and posteriorly, more frequently on the right side. The blood count revealed 3,900,000 red cells and 12,000 white cells with 75 per cent polymorphonuclears. Hemoglobin was 75 per cent. The Mantoux test was strongly positive but tests for typhoid undulant fever and paratyphoid fever were all negative. X-ray examination of the chest and gastrointestinal tract gave negative results. The temperature went as high as 103.8 F and the pulse to 90. In one week the temperature came down to 99.4 but went up again to 101 and stayed high for a few days gradually diminishing to 99 again with the pulse 80. Nearly all pain and tenderness have cleared up but with sudden elevation of temperature the epigastric distress returns with attendant loss of appetite. Urinalysis and X-ray examination of the gallbladder region are reported negative. Repeated blood counts have been as before while the temperature still was high. Now at the end of the fourth week the temperature still goes to 99 and 99.4. The boy has not shown any signs of cough or any other respiratory involvement. Will you kindly suggest what might be done further toward arriving at the etiology and treatment in this case?

M.D. Washington

ANSWER—The strongly positive Mantoux test indicates that the child is allergic to tuberculo-protein, which means that a primary tuberculosis complex is still active somewhere in the body, the most common location being in the lungs and adjacent glands. Only 25 per cent of these lesions are demonstrable roentgenologically. It is not uncommon for the tuberculous infection to spread from the tracheobronchial glands downward in the lymphatics to the mesenteric glands. Vague abdominal pain and fever might be caused by exacerbations in these glands. Unless a flat plate of the abdomen revealed calcification in these glands, clinical diagnosis could only be surmised. A normal sedimentation time of the red cells would practically rule out progressive tuberculous infection. Early Pott's disease of the lower thoracic or upper lumbar vertebrae should be excluded by X-ray examination, as referred pain from this source could cause fever and pain. Diaphragmatic pleuritis on a tuberculous basis could also cause the pain.

Early active rheumatic fever or rheumatic heart disease frequently produces upper abdominal pain. A normal sedimentation time would speak against this as would a normal electrocardiogram. Ready response of the pain and fever to salicylates would cause suspicion of rheumatic infection.

Peptic ulcers in children do occur and are often missed unless there is skilled X-ray interpretation, as they produce vague epigastric distress.

A Meckel's diverticulum can become ulcerated and inflamed, causing occasional fever and upper abdominal pain. Blood in the stool on a meat free diet is suggestive in this condition.

Small epigastric hernias, while not accounting for the fever, could cause vague epigastric distress and pain.

Study of the stool for parasites and ova might help in the diagnosis. A differential blood count often shows eosinophilia in these conditions.

Repeated urinalysis should be done, as occasionally pyuria will not be obvious in every specimen.

Colitis of various types must be considered but repeated stool examinations for blood, mucus and pus would aid in this diagnosis.

Vague rarer diseases that cause recurrent fever with abdominal pain are Hodgkin's disease and similar conditions, which could be diagnosed only by biopsy of an enlarged cervical node, if these nodes are enlarged.

One may be dealing with two distinct conditions: (a) upper abdominal distress or (b) fever from a different cause which accentuates any feeling of distress. The fever might be from recurrent tonsillitis or nasal sinusitis.

If all other tests prove negative but the Mantoux test is positive and there is a rapid sedimentation time of the red cells, one would strongly suspect that tuberculous mesenteric adenitis is the cause of the fever and upper abdominal pain. On the other hand, one must be certain that recurrent upper respiratory infections such as tonsillitis are not the cause of the fever accompanied now by abdominal pain, no matter what the original distress may have been from.

Treatment depends on etiology, but moderate rest, general hygienic treatment, bland diet, sunshine and fresh air would be indicated in any condition.

AMPUTATION STUMP INFECTION WITH BACILLUS PYOCYANEUS

To the Editor—Following a knee amputation for diabetic arterio-sclerotic gangrene of the foot there was an infection of the stump with *Staphylococcus aureus* (hemolytic) and *Bacillus pyocyaneus*. The staphylococcal part of the infection has responded to treatment with staphylococcus toxoid and antitoxin. The pyocyanus infection however has responded only slightly to the usual methods of hot compresses and the usual disinfectants such as merthiolate, aluminum acetate diluted solution of sodium hypochlorite and hexylresorcinol. There is abundant pus with gram negative rods. There is free drainage of every part of the wound. Can you advise me of any known specific for *Bacillus pyocyaneus* infections locally or systemically? If there is no known specific what method of treatment would you suggest for the infection?

M.D. California

ANSWER—As far as is known, there is no specific treatment for *Bacillus pyocyaneus* infection. A good method of treatment is to scrub the wound thoroughly with soap and water, to expose it to the sunshine, if available, for half an hour and, if any pocket of pus has formed in the stump, to drain it. Disinfectants such as mentioned are of no particular help. Soap and water was found most helpful during the war.

POSSIBLE ANILINE POISONING

To the Editor—A white man aged 59 who has worked with aniline dyes for the past thirty-five years has been getting attacks of colicky pain in the upper part of the abdomen about once a week for the past year. The pains are severe enough to produce shock and require morphine. He has had a chronic cough for the past five years and marked constipation with occasional diarrhea for three years. There is no history of syphilis or lead poisoning. The hemoglobin is 60 per cent (Taillqvist). The urine is dark brown and is negative for blood. No laboratory work has been done. Are these symptoms consistent with a diagnosis of chronic anilism? Please outline method of procedure and bibliography of clinical articles. The dyes concerned are chrysoidine, methylene blue, metanil yellow, stilbene yellow, nigrosine, basic brown, bismarck brown and auramine.

M.D. New York

ANSWER—This query furnishes no information whether the worker concerned was engaged in the manufacture of these dyes or only in their application, such as in a dye house. In either case it is probable that the worker was exposed to large numbers of other chemicals, such as varied intermediates in dye manufacture or various mordants, bleaches and fixing agents such as are used in connection with dyes. On the assumption that the condition has been acquired at work, it is highly probable that no single agent, such as aniline, or any one dye is to be regarded as responsible. Instead, such conditions ordinarily must be attributed to "mixed" intoxication, in which large numbers of substances to which exposures may have been provided during the thirty-five years of employment have contributed some part. While the manifestations mentioned are not inconsistent with the diagnosis of an occupational disease when properly supported by additional laboratory work, it must be recognized that the same type of manifestations in a person aged 59 frequently arise in the entire absence of exposures to chemicals in the course of employment. Before diagnosis of an occupational disease is made, more extensive laboratory work should be carried out including appropriate gallbladder and gastrointestinal X-ray examinations and complete blood examination including tests for methemoglobin. If benzene is employed in the manufacture of dyes, and if the worker is still exposed, urine sulfate tests should be carried out. This test is described in the *Journal of Industrial Hygiene* 18:349 (June) 1936. Chronic aniline poisoning is quite rare. The following are widely regarded as typical manifestations of

chronic aniline poisoning anemia, slowing of the pulse, disorders of digestion, such as eructations, loathing of food, vomiting, diarrhea, and eczematous and pustular eruptions on various parts of the body, especially on the scrotum, nervous symptoms, general debility, headache, ringing of the ears, vertigo, unrestful sleep, disturbances of sensibility, often also of motility and spasmodic muscular pain. Anemia and retarded pulse are early symptoms. The blood is of a brownish hue but microscopically unchanged, occasionally the urine contains blood (Kober and Hayhurst). A partial bibliography includes

- Young A G. Toxicological Studies of Aniline and Aniline Compounds. *J Pharmacol & Exper Therap* 27 125 (March) 1926
Arneith and Albacht. Qualitative Blood Findings in CO Lysol and Aniline Poisoning, *Zentralbl f Gerichtheilg* 4 225 (July) 1927
Davis P A. Aniline Poisoning in Rubber Industry. *J Indust Hyg* 3 57 (June) 1921
de Castro A. Aniline Poisoning in Dye Workers. *Gazz d osp* 41 930 (Oct 28) 1920
Thompson W G. Chronic Aniline Poisoning. *M Rec* 97 401 (March 6) 1920
Newton C R. Industrial Blood Poisons. *THE JOURNAL* April 24 1920 p 1149
Hamilton Alice. Aniline Poisoning. *J Indust Hyg* 1 204 (Aug) 1919
Baker V C. Aniline Poisoning. *New York M J* 106 790 (Oct 27) 1917
Lantz William. Aniline Poisoning. *THE JOURNAL* March 3 1917 p 692
Luce R V and Hamilton Alice. Industrial Aniline Poisoning in the United States. *THE JOURNAL* May 6 1916 p 1441

CALCAREOUS DEGENERATION OF ARTERIES

To the Editor—What is the best treatment for senile calcareous degeneration of the external iliac and femoral arteries? I am interested in the graphic method.

C M DESVERAINE MD Havana Cuba

ANSWER—There is no specific treatment for calcareous degeneration of the arteries. The treatment of this condition is the same as the treatment of generalized arteriosclerosis, which, as is well known, is unsatisfactory. Roentgenologic evidence of arteriosclerosis of the peripheral arteries is commonly found in instances in which evidence of impairment of the arterial circulation is absent. It is not until thrombosis occurs that the blood transporting function of the arteries is reduced. When there is diminution of circulation to the extremities, treatment becomes complex and can be presented only briefly here.

The chief aim of treatment is the prevention of gangrene, the program for which is the same as has been so well publicized for the prophylactic care of the feet in diabetes. Trauma should be avoided, new shoes should be worn for only short periods until thoroughly broken in, protection from cold is essential, and application of strong solutions containing iodine and phenol and other irritating substances is sharply interdicted. Such preparations although well tolerated by patients with normal circulation may lead to ulcers or gangrene in patients with impaired circulation. Trichophyte infections should be treated by the immersion of the feet in solutions of potassium permanganate rather than by application of solutions containing iodine or salicylic acid.

Postural exercises consist of alternate elevation and dependence of the extremities for periods of one minute each for fifteen minutes, two or three times daily. These exercises tend to increase the collateral circulation. Alternate immersion of the extremities in water of approximately 40 and 105 F for periods of one minute each, for thirty minutes three times daily, seems to help. The extremities may be warmed by exposing them to heat from one or two carbon filament bulbs in cabinets such as are commonly used in the treatment of arthritis. The temperature should not exceed 100 F. Theobromine and nicotin may increase the circulation to the extremities.

The artificial induction of fever by the intramuscular injection of sulfur in oil produces a sharp fever and temporarily increased circulation, which in many instances is valuable. Intermittent suction and pressure (passive vascular exercise) should be carried out for periods of not less than two or three hours daily. The application of diathermy to the thighs increases the circulation and may be of some value in treatment. Recently there have been reports of benefit following intermittent venous obstruction by inflating the cuff of a blood pressure apparatus placed about the thigh to the diastolic pressure for two minutes and then deflating it for two minutes over periods of several hours daily. However, this has been of little or no value in the hands of some physicians.

The use of insulin free pancreatic extracts or striated muscle extracts may increase the distance a person can walk before the distress of claudication occurs.

When medical treatment does not control the pain when the patient is at rest, section crushing or injection of the peripheral nerves or intraspinal injection of alcohol may be carried

out in selected cases. When gangrenous ulcers are painful, some relief may follow the application of anesthetic agents.

The following references may be of value.

- Brown G E. Thrombo Angitis Obliterans. *Surg Gynec & Obst* 58 297 (Feb 15) 1934
Brown G E, Allen E V and Mahorner H R. Thrombo Angitis Obliterans. *Clinical Physiologic and Pathologic Studies Philadelphia W B Saunders Company* 1928 pp 40 72
Herrmann L G and Reid M R. *J Med* 14 524 (Dec) 1933
Roth Grace M. *Proc Staff Meet Mayo Clin* 9 390 (June 27) 1934
Waller L M and Allen E V. *Ann Int Med* 5 478 (Oct) 1931
Allen E V and Brown G E. Intermittent Pressure and Suction. *THE JOURNAL* Dec 21 1935 p 2029

EFFECTS OF OXYGEN

To the Editor—Are there any deleterious effects in a patient or animal placed daily in an oxygen tent for one or two hours over a long period of time? What will it do to the circulatory system to the nervous system or to the metabolic functions? Please refer me to some literature which may deal in detail with this topic.

M D, Massachusetts

ANSWER—The effect of confinement in an oxygen tent for several hours daily will depend on the concentrations of oxygen and carbon dioxide and on the atmospheric conditions maintained.

In an oxygen tent the oxygen concentration is usually approximately 50 per cent, the carbon dioxide rarely exceeds 1 per cent in the first two hours, provided the tent is well designed and there is normal metabolism and the usual leakage. These concentrations are well within the margins of safety and have no effect on normal people. Fully saturated hemoglobin cannot accept additional oxygen. The carbon dioxide loss will continue to occur at the normal rate across the interface pulmonary blood alveolar air. Nurses have remained on duty for periods of from three to four hours at a stretch daily in oxygen chambers without detectable change in their condition. Patients who have diminished pulmonary circulation either by reason of cardiac weakness, emphysema or bronchitis may be benefited by a sojourn of several hours a day in tents or chambers. This benefit may be the result of temporary increase in oxygenation of the blood and consequent improvement in circulation. Patients with severe pulmonary disease and oxygen want must be provided with oxygen at an increased partial pressure continuously. Oxygen tents are usually maintained at lower temperature and humidity and with a greater rapidity of air movement across the face than is present outside. This may induce stimulation of the circulation, reduce metabolism and have a soothing effect on the nervous system.

An excellent bibliography on the physiology and therapeutics of oxygen may be obtained from Linde Air Products Company.

The following references are especially significant.

- Barcroft, Joseph. The Significance of Hemoglobin. *Physiol Rev* 4 249 (July) 1924
Boothby W M. Oxygen Therapy. *THE JOURNAL* Dec 10 1932 p 2026
Dec 17 1932, p 2106
Haldane J S. Respiration. New Haven Yale University Press 1922 p 427
Meakins J C and Davies H W. Respiratory Function in Disease. London Oliver and Boyd 1925

BANANA OIL OR AMYL ACETATE

To the Editor—From an industrial standpoint what are the hazards in the use of so called banana oil? It is used as a solvent in lacquers and often in spray gun work in coating furniture. Just what is banana oil? Can it produce narcosis when carelessly handled or accidentally spilled in a closed room? What other effects can it have when inhaled? Is banana oil sometimes a mixture with benzene and acetone when used as a solvent in lacquer work?

M D Ohio

ANSWER—Banana oil is iso amyl acetate, having the formula $\text{CH}_3\text{COOCH}_2\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_3$. However, in some industries, common practice attaches the name of banana oil to almost any solvent substance possessing the fruity odor of pears or bananas associated with this substance. It is possible that banana oil, or iso amyl acetate, may be mixed with benzene or acetone for use in spray coating but if so the mixture is not properly termed banana oil. In addition to iso amyl acetate, there are at least two other varieties, namely, normal amyl acetate and secondary amyl acetate. The latter has been investigated by the United States Public Health Service (Patty, I A, Yant, W P and Schrenk H H. Acute Response of Guinea Pigs to Vapors of Some New Commercial Organic Compounds. XI Secondary Amyl Acetate. *Pub Health Rep* 51 811 [June 19] 1936). This secondary amyl acetate in high concentrations produces narcosis terminating in death. Apart from narcosis irritation of the eyes and nasal mucous membrane are the chief manifestations. Iso-amyl acetate frequently has been investigated and reported on in the literature. The Smyth in the *Journal of Industrial Hygiene* (10 261 [Oct] 1928) included

this substance in a general study of lacquer solvents. They state that amyl acetate is considered as among the safest of the solvents investigated. The consensus of investigators everywhere is that iso-amyl acetate usually causes, in exposed lacquer workers, no greater degree of harm than is reflected by minor irritation of the eyes, the upper respiratory tract, the bronchi or other exposed tissues.

IMPOTENCE AND AZOOSPERMIA

To the Editor—A single man aged 32 with impotence and azoospermia, was operated on eight years ago for varicocele of the right cord. Following this operation a complete atrophy of the right testis developed and he has been completely impotent. He is otherwise, in good physical health except for mental depression. He states that he has never had venereal infection and that he has never had any swelling of the left epididymus. Examination of the left testis shows no evidence of past or present disease. The prostate showed a 1 plus enlargement with infiltration of the right vesicle but the left vesicle was not palpable. The expressed secretion showed an average of 50 to 60 leukocytes per high power field and a few leucithin bodies with a great amount of mucus but no spermatozoa or red cells. The prostate was somewhat soft in consistency but not tender. The centrifuged urine showed an average of 15 to 20 leukocytes and an occasional clump of pus cells per high power field. The Wassermann reaction has been negative on repeated examinations. The weight has been stationary for the past few years. The heart and lungs are normal. There is no evidence of spinal cord disease. Cystoscopic examination revealed no abnormalities of the bladder or bladder neck. There were a few granulations in the prostatic urethra and the patient had a rather small verumontanum; the orifices of the ejaculatory ducts appeared normal. There was no stricture of the urethra. The patient is a laborer doing outside work. His blood pressure is 135 systolic, 85 diastolic. I have been massaging the prostate and vesicles and using sounds occasionally with deep instillations of either 10 per cent mild protein silver or 0.5 per cent silver nitrate and diathermy to the prostate. I have used the anterior lobe of the pituitary in ascending doses up to 80 grains (5 Gm.) a day, anterior pituitary extract and antuitrin S, and also androstine subcutaneously. The patient showed some improvement under this therapy as manifested by the return of a few living and nonmotile spermatozoa on some occasions in the expressed secretion, also some reduction in the number of pus cells and an occasional partial erection on awakening. The improvement, however, has been only temporary and the patient has become much discouraged. Please offer any further suggestions that may be of benefit in bringing back his ability to obtain erection and to stimulate the return of spermatozoa. Should the condition be considered hopeless?
M. D., Minnesota

ANSWER—The fact that some spermatozoa were found in the expressed fluid indicates that there is no obstruction in any of the genital tubes, in other words, that the azoospermia is testicular in origin. As this patient has but one normal testicle, the treatment must be continued longer than otherwise and the results will be much slower. Tablets of the anterior lobe of the pituitary are generally considered to be devoid of therapeutic effect by mouth. Androstine was reported by the Council on Pharmacy and Chemistry to be practically inactive by biologic test (*THE JOURNAL*, Jan. 20, 1936, p. 2150). Small doses of thyroid (0.01 Gm.) may be of benefit. In addition, for his impotence, he should receive locally the sinusoidal-faradic current of moderate rapidity and as strong as he can bear without any pain. One cable is connected with a rectal electrode and the other with a wet-sponge electrode applied to the perineum and the current is allowed to pass for about ten minutes. Treatment may be given twice a week.

TEST FOR AMYLOIDOSIS

To the Editor—What tests may be used to determine the presence of amyloid disease and what is the efficacy of these tests?

VICTOR S. RANDOLPH, M.D., Phoenix, Ariz.

ANSWER—The only practical clinical test for amyloidosis is the intravenous injection of congo red, first proposed by Bennhold (*Deutsches Arch. f. klin. Med.* 142:32 [March] 1923). This dye had been used previously for the determination of plasma volume (Keith, N. M., Rowntree, L. G., and Geraghty, I. T. A Method for the Determination of Plasma and Blood Volume, *Arch. Int. Med.* 16:547 [Oct.] 1915; Griesbach, *Deutsche med. Wchschr.* 47:1289 [Oct. 27] 1921). Since the original description by Bennhold, the reliability of the test has been confirmed by numerous authors (Bookman and Rosenthal, *Am. J. M. Sc.* 173:396 [March] 1927; Barker, N. W., and Snell, A. M., *J. Lab. & Clin. Med.* 16:262 [Dec.] 1930; Wallace, J. E., *Lancet* 1:391 [Feb. 20] 1932).

The test is performed by the intravenous injection of from 10 to 18 cc. of a 0.75 to 1.5 per cent sterile solution of congo red in distilled water and the withdrawal of blood samples after four minutes and after one hour. Care should be taken to prevent hemolysis. The two serums are compared in the colorimeter with the four minute sample as the standard of 100 per cent. Friedman and Auerbach (*J. Lab. & Clin. Med.* 21:93 [Oct.] 1935) propose that the serums be mixed with 95 per cent alcohol to precipitate any dissolved hemoglobin in the

proportion of 2 cc. of serum to 8 cc. of alcohol. Wallace uses plasma and collects 4.5 cc. of blood in 0.5 cc. of 38 per cent sodium citrate solution. He points out that the plasma volume is never constant and that this method permits that factor to be considered.

If more than 60 per cent of the congo red disappears from the blood in one hour, it may be assumed that the patient has amyloidosis. Loss of from 40 to 60 per cent is of doubtful significance. Normal individuals will show up to 30 per cent and more rarely 40 per cent loss.

Most cases of chronic lipid nephrosis show from 40 to 60 per cent disappearance from the blood, but an examination of the urine will show excretion of the dye in contrast to amyloidosis (Barker and Snell). In diseases of the liver, Bennhold found abnormal retention in the blood but without correlation with the severity of the disease.

The congo red test when properly performed and judiciously evaluated, is of distinct value in the differential diagnosis of amyloidosis.

CORRECTION OF CICATRICAL ECTROPION

To the Editor—Following a fall from a porch a child received an incised wound on her left cheek extending vertically into the left lower eyelid as far as and including the palpebral margin. The wound had open the facial muscles and the orbicularis oculi in the lid. The wound was sutured with interrupted fine silk and healed by primary intention. About four weeks after the injury a cicatricial ectropion was developing as a result of the contraction of the scar. How soon would it be practical to attempt correction of the ectropion and what operative procedures should be followed? The child is able to close the eye, as the orbicularis is normal.

BENJAMIN BRAUDE, M.D., Chicago.

ANSWER—Such a contraction will usually follow a vertical scar which involves both the cheek and the lower lid. It may be corrected by making a transverse incision in the part of the lid that is longest transversely, and throwing into this transverse incision a flap taken from the opposite border of the wound or the incision that results from reopening the cheek scar. With proper undermining this can usually be done. The upper end of the secondary incision that frees this flap should bear such a relationship to the level of the transverse incision that the tissues below this transverse incision will hold up the undermined part of the cheek from which the transverse flap is taken.

Another plan that is occasionally necessary is to relieve the contracture by making a transverse incision through it and spreading the defect until the lid is well up in place, and the resulting defect is then covered with a free skin graft. Such a graft is usually of postauricular skin, since this is thin, takes readily, and matches the skin of the face in color.

The operation should be undertaken any time the eye seems to be suffering from lack of contact of the lid with the globe. Otherwise there is no particular hurry, and often the period of contracture is followed by a period of relaxation as the scar becomes older and softer, thus usually with time the amount of correction necessary is less.

DYSMENORRHEA TREATED BY CAUTERIZATION OF GENITAL SPOTS

To the Editor—A patient, aged 16, has severe attacks of dysmenorrhea. Vomiting occurs during the attack and she is unable to retain any liquids. The only treatment so far has been the administration of capsules each containing aminopyrine 5 grains (0.3 Gm.) extract of hyoscyamus five-sixths grain (0.054 Gm.) and phenobarbital one-half grain (0.03 Gm.) but they fail to prevent the attack. I tried the application of 5 per cent Larocain with only slight improvement in the 'genital spots' which I found to be enlarged and red. I did not have 20 per cent cocaine. I should like to attempt cauterizing these spots but cannot find in my text-book the exact location of the tuberculum septi which with the anterior portion of the inferior turbinates is said to constitute the genital spots. Could you tell me exactly where the tuberculum is? Also how to apply the trichloroacetic acid to the spots.

M. D., New Jersey

ANSWER—The tuberculum septi is a tubercle or prominence on the upper anterior part of the nasal septum. This area and the anterior half of the lower turbinates were called 'genital spots' by Fliess. These areas are invariably swollen more prominent, bleed more readily on slight touch and are exceedingly hyperesthetic preceding and during menstruation (Brettauer, *J. Surg. Gynec. & Obst.* 17:381, 1913). According to Koblanck (*Die Nase als Reflexorgan*, Berlin and Vienna, Urban & Schwarzenberg, 1930) Fliess maintained that the abdominal pain associated with menstruation may be relieved by treating the swellings in the inferior turbinates, and the backaches may be eliminated by reducing the swelling on the septum. The associated gastric symptoms, such as vomiting disappear after applying medication to the left middle turbinate and the headaches vanish after electrolysis of the tubercle on the septum.

The application of trichloroacetic acid is somewhat painful, hence 5 per cent cocaine should be applied to the sensitive spots before cauterizing them with trichloroacetic acid. According to Brettauer it is best to cauterize at intervals of from three to seven days during one intermenstrual period. In some cases this may have to be repeated during one or two successive intermenstrual periods. After each treatment a slough forms. This disappears in about five days, so that about four applications of trichloroacetic acid may be made during one intermenstrual period. The relief in many cases is spectacular. According to Emil Mayer (*THE JOURNAL*, Jan 3, 1914, p 6), permanent relief is obtainable by intranasal treatment in from 50 to 75 per cent of the cases.

BACILLUS PROTEUS INFECTIONS OF URINARY BLADDER

To the Editor—What agents other than *Bacillus acidophilus* will suppress the growth of *Bacillus proteus*? To what extent is the bladder tolerant to local acidifying solutions? What acid solutions would you recommend for irrigating the bladder in order to combat *B. proteus* infection? For a *B. proteus* infection of the urinary tract would you advise a high starch low protein or a ketogenic diet? How efficacious is *B. proteus* vaccine?
M D New York

ANSWER—*Bacillus proteus* can be eliminated from the urine by methods that are more efficient than the injection of *Bacillus acidophilus*. Acidification of the urine by medication will usually cause the urine containing *B. proteus* to be bacteriostatic, provided the pH can be reduced to a sufficiently low level. If the pH of the urine is 7.0 or lower, it will usually not be very difficult to eliminate the organism by this method. However, if the urine is alkaline and the pH is more than 7.5 or 8, it may be extremely difficult to render it acid by any form of medication. It is usually advisable to give either the ketogenic diet or mandelic acid therapy first and give drugs in addition to insure acidification.

Acidification of the urine is best brought about by administration of ammonium chloride or ammonium nitrate. When these are not tolerated, nitric acid or nitrohydrochloric acid may be used, although the latter is not usually as efficacious as the former. In addition to acidification by means of these drugs, chemotherapy or the ketogenic diet should be used.

The ketogenic diet is unquestionably better than a high starch, low protein diet in the elimination of *Bacillus proteus*. A simpler way of obtaining the same result, however, is available in the oral administration of mandelic acid.

Vaccines made from *Bacillus proteus*, either stock or autogenous, have not proved to be of much therapeutic value.

Cystoscopic curettage and topical application of 20 per cent silver nitrate to the areas involved may be employed in cases that are resistant to the remedies suggested.

FOX FORDYCE DISEASE

To the Editor—A youth aged 19 years of Swedish parents has Fox Fordyce disease involving the axillae, the areolar border of the nipples and the pubic area. Treatment has consisted of local applications of ammoniated mercury, Lassar's paste, anthralin sulfur and salicylic acid ointment and Supertab (a proprietary white coal tar ointment). No apparent benefit has resulted and the patient was referred to two dermatologists. One made a diagnosis of chronic folliculitis and the other concurred in my diagnosis of Fox Fordyce disease. Both recommended x-ray therapy. The patient has had about a dozen applications of x-rays without any appreciable benefit. This condition has persisted now for over six years and has received energetic treatment of many kinds. The urine has been negative on repeated examinations. Have you any suggestions as to treatment?
M D Connecticut

ANSWER—The occurrence of Fox Fordyce disease, a rare, chronic, papular disease of the axillae, pubes, breasts and genital and perianal region is unusual in the male, though not so rarely seen as was thought when the disease was first described. It is connected in some way with the apocrine sweat glands, which occur in all these regions in the female but are supposed to occur in the male only in the axillary, pubic and perianal regions. The occurrence about the nipples in the case described is interesting and exceptional. The failure of treatment to relieve the intense itching is typical. Since x-rays have failed to give relief phenol diluted with water, alcohol or glycerin may be painted on, or even 95 per cent phenol used on one small area at a time. If this fails, the injection of 95 per cent alcohol may be tried. Under general anesthesia, the hypodermic needle is plunged vertically into the skin to the subcutis layer and 2 or 3 minims of 95 per cent alcohol injected. The next injection should be about one-fourth inch from the first. The whole area is thus treated, injection into blood vessels being avoided. No dressing is needed. It may be necessary to repeat this treatment after some months.

A salt of ethyl aminobenzoate dissolved in almond oil may be used without preliminary anesthesia. The injections are

made as described for alcohol and the relief is immediate, but it is usually necessary to repeat the injections every few days to get a lasting effect. The itching is usually relieved for several months. This applies to pruritus ani, for which the method was devised, but the same effect should be obtainable in Fox Fordyce disease (Andrews, G C. *Diseases of the Skin*, Philadelphia, W B Saunders Company, 1930, p 367).

Excision of the involved areas has been recommended if all other measures fail.

ARTHRITIS SUBSIDING DURING PREGNANCY

To the Editor—A woman aged 38, with polyarticular arthritis for the past ten or twelve years is entirely free from symptoms during pregnancy. She has had nine pregnancies with return of the trouble between the termination of each labor and the next pregnancy. There is a definite aggravation of symptoms during the menstrual period. She is somewhat overweight and has a tachycardia but physical examination is otherwise essentially negative.
M D Illinois

ANSWER—This interesting remission of arthritic symptoms during pregnancy has not been noted in the literature of chronic arthritis. Some relationship between the joint symptoms and the amount of estrogen in the blood stream seems possible. The trial of one of the estrogenic substances would be of interest and of possible benefit.

There are reports in the literature of instances of idiopathic intermittent hydrarthrosis in which the joint swelling has receded during pregnancy to return after delivery. Ergotamine tartrate is said to have been of benefit. The cautious trial of this drug is suggested, but prolonged administration of this drug is not advisable, owing to the danger of ergotism.

EFFECT OF INJURY ON PELVIC TUMORS

To the Editor—If a person has a tumor or mass within the pelvis and receives a blow or is injured by a fall that brings about an acute inflammation of the tissues within that area and pain and soreness of the parts involved would ultraviolet short wave or zolite treatments be helpful in reducing the inflammation and other symptoms in such conditions? If there is a tumor would the injury cause it to increase in size more rapidly than before?
M D, Nebraska

ANSWER—It is rare for a blow or a fall to bring about an acute inflammation of a tumor and the tissue around it. However, when this occurs, the treatment mentioned should prove as helpful for this type of inflammation as for any other. Unless the injury produces hemorrhage or a twist of the tumor with subsequent obstruction of the blood vessels and edema, there will usually be no striking increase in the size of the tumor.

PHENOBARBITAL ADDICTION

To the Editor—What is a proper dose of phenobarbital as a hypnotic to be used habitually in insomnia? May the desired effect usually be obtained by administering divided doses in the course of the night? How large a dose is likely to produce injurious results and what are those results?
M D California

ANSWER—There is no such dose as the "proper dose for the habitual use" of any hypnotic. Such use is decidedly improper, and, no matter what dose is sufficient at first to induce sleep, habituation would require progressive increase in dosage unless the cause of the insomnia has in the meantime been removed. It is generally better to administer an adequate dose, e g, 0.1 Gm, of phenobarbital at one time than divided doses at intervals. Addiction is fairly readily acquired and when given in excess of from 0.3 to 0.5 Gm is likely to lead to chronic poisoning with symptoms of confusion, mild dementia, debility, ataxia, gastro intestinal disturbance and anemia.

REMOVAL OF HAIR ON NIPPLES

To the Editor—What method of treatment may be followed in removing hair about the nipples in a woman aged 25?
M D Ohio

ANSWER—Electrolysis is the only approved method for permanent removal of hair. A platinum needle attached to the negative pole of a galvanic circuit is inserted into the follicle as deeply as the root of the hair and a current of from 1 to 1.25 milliamperes is allowed to pass for from ten to twenty seconds. Then the circuit is broken and the needle removed and the hair should slip out easily. If the hair is still firmly fixed in the skin, it is probable that the needle did not follow the follicle accurately and the procedure must be repeated. In a second trial fails this hair had best be left until another time. It is important not to treat hairs less than 0.5 cm apart, for fear of scarring. After the treatment a small papule forms, but in a few days it subsides and it is then permissible to give another treatment in this area. For fine hairs a smaller current will suffice.

Medical Examinations and Licensure

COMING EXAMINATIONS

STATE AND TERRITORIAL BDARDS

ALABAMA Montgomery, June 28 Sec Dr J N Baker 519 Dexter Ave Montgomery

ALASKA Juneau March 1 Sec Dr W W Council, Box 561 Juneau

COLORADO Denver Jan 57 Sec Dr Harvey W Snyder, 831 Republic Bldg Denver

CONNECTICUT *Basic Science* New Haven Feb 12 *Prerequisite to license examination* Address State Board of Healing Arts 1895 Yale Station New Haven *Medical* Hartford March 89 *Endorsement* Hartford, March 22 Sec, Medical Examining Board Dr Thomas P Murdock 147 W Main St Meriden

DELAWARE Dover July 1214 Sec Medical Council of Delaware Dr Joseph S McDaniel 229 S State St Dover

DISTRICT OF COLUMBIA *Basic Science* Washington Dec 27 28 *Medical* Washington Jan 10 11 Sec Dr George C Ruhland 203 District Bldg Washington

FLORIDA Jacksonville, June 13 14 Sec Dr William M Rowlett Box 786 Tampa

GEORGIA Atlanta June Joint Sec State Examining Boards, Mr R C Coleman 111 State Capitol Atlanta

IDaho Boise April 56 Commissioner of Law Enforcement Hon J L Balderston 205 State Capitol Bldg, Boise

ILLINOIS Chicago Jan 25 27 Superintendent of Registration Department of Registration and Education Mr Homer J Byrd Springfield

INDIANA Indianapolis June 21 23 Sec Board of Medical Registration and Examination Dr J W Bowers 301 State House Indianapolis

IOWA *Basic Science* Des Moines Jan 11 Sec Dr W L Strunk Decorah

MAINE Portland March 89 Sec Board of Registration of Medicine Dr Adam P Leighton 192 State Street Portland

MASSACHUSETTS Boston, March 8 10 Sec Board of Registration in Medicine Dr Stephen Rushmore 413 F State House Boston

MINNESOTA *Basic Science* Minneapolis Jan 4-5 Sec Dr J Charney McKinley 126 Millard Hall University of Minnesota Minneapolis *Medical* Minneapolis Jan 18 20 Sec Dr Julian F Du Bois 150 St Peter St, St Paul

MONTANA Helena April 56 Sec Dr S A Cooney 205 Power Block Helena

NEBRASKA *Basic Science* Omaha Jan 11 12 Dir. Bureau of Examining Boards Mrs Clark Perkins State House Lincoln

NEVADA *Reciprocity* Carson City Feb 7 Sec Dr John E Worden Capitol Bldg Carson City

NEW HAMPSHIRE Concord March 10 11 Sec Board of Registration in Medicine Dr Fred E Clow State House Concord

NEW JERSEY Trenton June 21 22 Sec Dr James J McGuire 28 W State St Trenton

NEW MEXICO Santa Fe April 11 12 Sec Dr Le Grand Ward 135 Sena Plaza, Santa Fe

NEW YORK Albany Buffalo New York and Syracuse Jan 24 27 June 27 30 and Sept 19 22 Chief Professional Examinations Bureau Mr Herbert J Hamilton 315 Education Bldg Albany

NORTH DAKOTA Grand Forks Jan 47 Sec Dr G M Williamson 41/ S 3rd St Grand Forks

OREGON *Medical* Portland Jan 46 Sec Dr Joseph F Wood 509 Selling Bldg Portland *Basic Science* Portland March 19 Sec State Board of Higher Education Mr Charles D Byrne University of Oregon Eugene

PENNSYLVANIA Philadelphia Jan 48 Sec Board of Medical Education and Licensure Dr James A Newpher 400 Education Bldg Harrisburg

RHODE ISLAND Providence Jan 67 Chief Division of Examiners Mr Robert D Wholey 366 State Office Bldg Providence

SOUTH DAKOTA Pierre Jan 18 19 Director of Medical Licensure Dr B A Dyer Pierre

VERMONT Burlington Feb 8 Sec Board of Medical Registration Dr W Scott Nay, Underhill

WEST VIRGINIA Huntington March 21 23 Sec Public Health Council Dr Arthur E McClue State Capitol Charleston

WISCONSIN Madison Jan 11 14 Sec Dr Henry J Gramling 2203 S Layton Blvd Milwaukee

WYOMING Cheyenne Feb 7 Sec Dr G M Anderson Capitol Bldg Cheyenne

NATIONAL BOARD OF MEDICAL EXAMINERS SPECIAL BDARDS

Examinations of the National Board of Medical Examiners and Special Boards were published in THE JOURNAL December 18 page 2091

Wisconsin Reciprocity Report

Dr Henry J Gramling, secretary, Wisconsin State Board of Medical Examiners, reports that ten physicians were successful in the oral and practical examination for reciprocity applicants held at Wisconsin Rapids, Oct 14, 1937 The following schools were represented

School	PASSED	Year Grad	Reciprocity with
College of Physicians and Surgeons of Chicago	(1934)	(1908)	Illinois
Loyola University School of Medicine	(1934)	(1935)	Illinois
Northwestern University Medical School	(1934)	(1934)	New York
Indiana University School of Medicine	(1933)	(1933)	Indiana
University of Michigan Medical School	(1933)	(1933)	Michigan
University of Michigan Medical School	(1921)*	(1924)*	Minnesota
University of Minnesota Hospital Medical College	(1908)	(1908)	New York
University of Wisconsin Medical School	(1935)	(1935)	New York

* License has not been issued

Hawaii July Examination

Dr James A Morgan, secretary, Board of Medical Examiners, reports the oral and written examination held at Honolulu, July 12-15, 1937 The examination covered 10 subjects and included 80 questions An average of 75 per cent was required to pass Four candidates were examined, three of whom passed and one failed The following schools were represented

School	PASSED	Year Grad	Per Cent
Yale University School of Medicine	(1935)	(1935)	84.7
Washington University School of Medicine	(1935)	(1935)	79.6
Licentiate of the Royal College of Physicians of London and Member of the Royal College of Surgeons of England	(1936)	(1936)	79.2*

School	FAILED	Year Grad	Per Cent
Creighton University School of Medicine	(1936)	(1936)	67.8

* Verification of graduation in process

Iowa June Examination

Mr H W Grefe, director, Division of Licensure and Registration, reports the written examination held by the Iowa State Board of Medical Examiners at Iowa City, June 8 10, 1937 The examination covered 8 subjects and included 100 questions An average of 75 per cent was required to pass Eighty five candidates were examined, all of whom passed The following schools were represented

School	PASSED	Year Grad	Per Cent
George Washington University School of Medicine	(1935)	(1935)	89.3
Northwestern University Medical School	(1935)	(1935)	93.3
State University of Iowa College of Medicine	(1937)*	(1937)*	78.3

78.8	79.3	79.4	79.5	79.5	79.5	80	80.3	80.5	80.5
81	81	81.3	81.4	81.4	82.3	82.4	82.6	82.9	83
83	83.1	83.3	83.5	83.6	84.1	84.1	84.5	84.6	84.8
84.9	85.5	85.6	85.8	85.9	85.9	86	86.1	86.1	86.1
86.3	86.3	86.3	86.4	86.4	86.4	86.5	86.5	86.8	86.9
87	87.6	87.8	87.8	87.8	87.9	87.9	88	88.3	88.5
88.6	88.6	88.8	88.8	89	89.1	89.3	89.4	89.4	89.6
89.8	90.3	90.5	90.5	90.6	91.3	92			

Harvard University Medical School	(1934)	90.1
Creighton University School of Medicine	(1936)	81.8 81.9* 89.5

Twelve physicians were licensed by reciprocity and one physician was licensed by endorsement from July 12 through October 20 The following schools were represented

School	LICENSED BY RECIPROCITY	Year Grad	Reciprocity with
Rush Medical College	(1932) Minnesota	(1934)	S Dakota
University of Michigan Medical School	(1931)	(1934)	Michigan
Creighton University School of Medicine	(1931)	(1936 2)	Nebraska
University of Nebraska Col of Med	(1934 3), (1936 2)	(1935)	Nebraska
University of Wisconsin Medical School	(1935)	(1935)	Wisconsin

School	LICENSED BY ENDORSEMENT	Year Grad	Endorsement of
College of Medical Evangelists	(1937) N B M F		

* Licenses have not been issued

Rhode Island July Examination

Mr Robert D Wholey, chief, Division of Examiners, reports the oral written and practical examination held by the Board of Examiners in Medicine at Providence, July 1-2, 1937 The examination covered 20 subjects and included 50 questions An average of 80 per cent was required to pass Thirteen candidates were examined, 11 of whom passed and two failed Four physicians were licensed by endorsement The following schools were represented

School	PASSED	Year Grad	Per Cent
University of Colorado School of Medicine	(1933)	(1933)	86
Georgetown University School of Medicine	(1935)	(1935)	81
Tufts College Medical School	(1935) 80	(1936) 80	81
St Louis University School of Medicine	(1936)	(1936)	91
Hahnemann Med College and Hospital of Philadelphia	(1936)	(1936)	90
Jefferson Medical College of Philadelphia	(1936)	(1936)	90
University of Vermont College of Medicine	(1936)	(1936)	87
Regia Università degli Studi di Bologna Facoltà di Medicina e Chirurgia	(1935)	(1935)	81

School	FAILED	Year Grad	Per Cent
Tufts College Medical School	(1936)	(1936)	57
Hahnemann Med College and Hospital of Philadelphia	(1936)	(1936)	71

School	LICENSED BY ENDORSEMENT	Year Grad	Endorsement of
Yale University School of Medicine	(1929) N B M F	(1935)	(1935)
Georgetown University School of Medicine	(1935)	(1936)	(1936)
Tufts College Medical School	(1935)	(1936)	(1936)

* Verification of graduation in process

Book Notices

The Management of Obstetric Difficulties By Paul Titus M.D. Obstetrician and Gynecologist to the St Margaret Memorial Hospital Pittsburgh. Cloth Price \$8.50 Pp 879 with 314 Illustrations St Louis C V Mosby Company 1937

Practically constructed and uncomplicatedly put forth, this volume should prove to be a valuable addition to the library of every physician who does obstetrics. Straightforward in its presentation, there is no great amount of unnecessary detail, the idea of the author being, apparently, to present a practical book for reference. Although the work may be too advanced and lacking in detail to make it valuable as a textbook for undergraduate students, it should make a good reference book for even the student. The book is well written, interesting and easy to read and is profusely illustrated with well done and informative drawings and color plates. Particularly gratifying is the thoroughness of the treatments discussed, both medical and surgical. Rarely does one find this type of book giving detailed treatment, a thing for which the busy practitioner who is seeking information will be thankful. The prescriptions alone should make the book worth owning. For those who are interested in the operative obstetric fields the book is of value because not only does Titus tell one what operation should be done but he goes into some detail in the description of the operative technique. It is difficult to point out particular chapters in the work that merit special attention. The chapter on sterility is excellent in its completeness. Other parts of special note are the chapters on anesthesia and analgesia, the toxemias, cesarean section and the final chapters on intravenous therapy, which is of particular interest and value. The volume by Titus can be highly recommended for addition to the library of any physician who is doing obstetric work.

What Is Osteopathy? By Charles Hill M.A. M.D. DPH Deputy Medical Secretary of the British Medical Association and H. A. Clegg M.A. M.B. MRCP Deputy Editor of the British Medical Journal. With a preface by H. G. Wells. Paper Price 7s 6p Pp 212 with 11 Illustrations London J. N. Dent & Sons Ltd 1937

"Osteopaths are not necromancers they do not invoke the assistance of the planets to guide their deliberations, they have not invented some elixir of life. They have a theory and a practice, and it is the purpose of this book to examine this theory and practice. It is not our aim to persuade patients not to seek the advice of a practitioner of osteopathy. But if a person wants to be treated by an osteopath he should have some idea of what the osteopath can do for him, as he should have some idea of what the ordinary doctor can do for him. So—What is Osteopathy?"

The answer to this question based on the proceedings before the Select Committee of the House of Lords appointed to consider the Registration and Regulation of Osteopaths, cannot be read by any one who has ever spent much time at hearings before legislative committees in the United States without being deeply impressed with the vast difference both in spirit and in method between the British lawmaking machinery and our own. The Select Committee, in a considerable number of hearings, devoted sufficient time to the consideration of this measure to allow the presentation of all pertinent evidence. The British Medical Association was represented by counsel, who was permitted to cross examine the witnesses introduced by the proponents of the bill. In our legislative halls, on the contrary, a couple of hours would be allotted for a hearing and, after the cult advocates had overrun their time, the medical profession would be given the remainder, with questioning of witnesses strictly barred.

The evidence presented to the House of Lords committee may be considered under two heads that dealing with ideas promulgated by Andrew Taylor Still, founder of osteopathy, and that showing how far his modern disciples have departed from his teachings. The cardinal doctrines of Still were the self sufficiency of the body and the unlimited restorative power of nature, the removal by manipulation of mechanical interference with the functions of blood vessels and nerves, the uselessness and harmfulness of all drugs and the entire independence of osteopathy as a system applicable to, and sufficient for, all diseases. The leading advocates of osteopathy who

appeared in support of the bill testified, nevertheless, that they no longer adhere to the principles enunciated by the founder but follow the example of medical practitioners in the use of drugs, serums and surgery. Further it was admitted that no scientific experimental evidence in support of osteopathy had ever been produced. Chapters dealing with osteopathic education in the United States and Britain reveal how far it falls below the standard of schools of medicine. In its report the committee said:

The Committee find on the evidence before them that the claim of the Osteopaths to treat all diseases as set out in the Bill has not been established and that it would not be safe or proper for Parliament to recognize osteopathic practitioners as qualified on a similar footing to that of registered medical practitioners to diagnose and treat all human complaints.

To all who wish to learn something about osteopathy, this book is commended without reserve.

Research Memorandum on Social Aspects of Relief Policies in the Depression By R. Clyde White Professor of Social Economics School of Social Service Administration University of Chicago and Mary K. White Statistician Chicago Council of Social Agencies. Prepared under the direction of the Committee on Studies in Social Aspects of the Depression with the cooperation of the Committee on Social Security. Bulletin 38. Paper Price \$1 Pp 173 New York Social Science Research Council 1937

Research Memorandum on Social Work in the Depression By T. Stuart Chaplin Chairman Department of Sociology University of Minnesota and Stuart A. Queen Chairman Department of Sociology and Anthropology Washington University. Prepared under the direction of the Committee on Studies in Social Aspects of the Depression. Bulletin 39. Paper Price \$1 Pp 134 New York Social Science Research Council 1937

The Social Science Research Council, composed of representatives chosen from seven constituent organizations dealing with the social sciences, has fostered a series of "Studies in the Social Aspects of the Depression," of which these two works are a part. They are devoted to suggestions for lines of research in the subjects considered. They raise a multitude of searching questions, most of which the authors admit are easier to ask than to answer. The objective sought is clearly research that will determine just what has happened to social work and been accomplished by it, and what future tendencies are, with their effect on individuals, society and the social workers themselves. The indefiniteness of the whole field is emphasized by the frequently repeated demand for a determination of objectives.

Both works show the sort of "inbreeding" that is characteristic of social workers. The "Research Memorandum on Social Work in the Depression," while discussing medical relief under the FERA, makes almost no reference to the great amount of published material by medical associations or of the part they played in the organization of that work. In the discussion of medical-social workers there is scarcely any reference to the medical profession, hospitals or the public health service. The bibliographies and footnotes, which are an integral part of a work designed for the guidance of research workers, show the same defects, even governmental documents in these special fields are seldom mentioned. There are so many suggestions of practical outlines for research that it seems safe to predict a great increase in the number of master's and doctor's theses that will follow. The research worker will find these works of great value in outlining the technique to be used in the field of social research. This is especially true of the final chapter of the 'Research Memorandum on Social Work in the Depression.'

Quelques vérités premières (ou soi disant telles) en chirurgie abdominale Par H. Mondor professeur agrégé de pathologie chirurgicale à la Faculté de médecine de Paris. Collection publiée sous la direction de MM. L. Ombredanne et V. Flessinger. Boords. Price 24 francs Pp 97 Paris Masson & Cie 1937

Under the editorial supervision of Drs. Louis Ombredanne and Noël Flessinger have been or are being published a number of short, concise monographs dealing with surgical or medical specialties. It is somewhat difficult to classify such publications, they are not quiz compends nor are they synopses or syllabi. Perhaps "surgical tabloid" comes nearest the truth. Mondor's opus is replete with aphorisms many of which have stood the test of time, while others may or will have to be changed as new truths become revealed. Ombredanne himself suggests that

it might have been wiser to entitle the monograph "truths of today." The field covered includes abdominal wall traumas, gastric, duodenal and pancreatic lesions, intestine and peritoneum, and gynecologic surgery. Writing of abdominal wall trauma, one is advised to reexamine the patient every half hour for possible internal lesions. Abdominal rigidity is considered pathognomonic of a lesion of the hollow viscera. To give morphine to a patient with a lesion of the abdominal wall of unknown severity is clumsily to mask symptoms which are anxious to unfold themselves. In the presence of gastric cancer with metastases, one should always perform a gastro-enterostomy, it may palliate for a long time. In cases of chronic pancreatitis with enlargement and hardening of the head of the pancreas, drainage of the common duct is advocated. In milder cases (formes frustes), cholecystostomy and prolonged drainage are preferred. In rectal cancer the surgeon is only too often consulted two years after the onset of symptoms, one year after the first consultation. Rectal examinations should be made more frequently. Three laboratory tests, added to a pelvic examination, should confirm the presence of an ectopic gestation, namely, the Aschheim-Zondek reaction, which is of prime importance, and red and white blood counts. Pelvipеритонitis, when not puerperal or postabortive, is almost always due to the gonococcus. Examination of the vulvovaginal secretions should confirm the diagnosis. Surgical intervention in such cases is a grave error. In acute peritonitis one is justified in making use of the x-rays in order to diagnose a possible pneumoperitoneum, provided too much valuable time is not spent in so doing. If x-ray examination is negative but the clinical signs point to perforation, one should operate at once.

These are only a few of the trite statements to be found throughout the monograph. As a refresher, it should prove of value to the average surgeon, it is too dogmatic for students preparing their examinations. As a compendium of generally accepted facts, there is little to criticize and much to commend.

Surveys of American Higher Education. By Walter Crosby Eells. Professor of Education, Stanford University. Paper. Pp. 538 with 11 illustrations. New York City: Carnegie Foundation for the Advancement of Teaching, 1937.

Under the sponsorship of the Carnegie Foundation, Professor Eells of Stanford has made a critical study of the records of surveys in the field of higher education in the United States. Beginning with the Oberlin study in 1908, more than 500 such surveys were identified. Printed and published reports to the number of 230 constitute, however, the primary basis of Professor Eells' analysis. Particular attention has been paid to the technique of educational surveys and to the methods of presenting the data obtained. An interesting chapter has been devoted to an attempt to appraise the results of surveys as seen by the institutions affected and others. Thirty, regarded as outstanding, have been subjected to detailed analysis. The appendices contain a wealth of material on such subjects as surveying agencies, costs and financing of surveys, bibliography, and opinions concerning future trends in higher educational surveying. Like the war to end war, this survey of surveys is not final. On the one hand, some significant material has been omitted, and, on the other, new plans and procedures have been developed since Professor Eells collected his material.

Diseases of the Nervous System in Infancy, Childhood and Adolescence. By Frank R. Ford, M.D., Associate Professor of Neurology, The Johns Hopkins University. Cloth. Price \$8.50. Pp. 953 with 107 illustrations. Springfield, Illinois & Baltimore: Charles C. Thomas, 1937.

This book is a timely contribution to the field of neurology in infancy and childhood. Besides the subjects of strictly neurologic interest the author has included neurologic complications of general diseases, so that it is encyclopedic in scope. In the first part the examination of the nervous system and clinical aspects of the anatomy and physiology of the nervous system are concisely handled. Only essential data are presented and at the end of each discussion is a well selected bibliographic reference by which the reader may extend his interest. Most of the references given are those which are written in English. The succeeding chapters deal with neurologic disturbances classified on the basis of etiology and presented in a manner that stresses the clinical features of the disorders. These embrace such subjects as prenatal diseases of the nervous sys-

tem, hereditary and degenerative diseases of the nervous system, infections and parasitic invasions of the nervous system, toxic and metabolic disorders involving the nervous system, vascular and circulatory disorders, neoplasms, injuries by physical agents, the epilepsies and paroxysmal disorders of the nervous system, diseases of the autonomic system, myopathies, and finally a discussion of syndromes and symptom groups. In spite of this scope the author does not present anything that is not useful and essential. The material is well organized and carefully edited. It is adequately illustrated and the written material is presented in a readable style. A vast amount of data is handled scholarly in one textbook that ordinarily would be found in several volumes. The book should appeal to the general practitioner as well as to the pediatrician and neurologist. Every medical library should have a copy, as it will serve as a valuable reference work on the subject of pediatric neurology.

A Textbook of the Practice of Medicine. By Various Authors. Edited by Frederick W. Price, M.D., C.M., F.R.C.P., Consulting Physician to the Royal Northern Hospital, London. Fifth edition. Cloth. Price \$12.50. Pp. 2638 with 112 illustrations. New York & London: Oxford University Press, 1937.

The first edition of this textbook appeared in 1922 and each edition since has had from one to four additional impressions. The contributors are well chosen and not so numerous as usual in American books of the same cooperative type. This fact adds, perhaps, to the evenness of presentation. There have been some alterations in classification which demonstrate the change in our views of certain diseases. Thus herpes zoster has been transferred from the diseases of the skin to the sub-section on diseases due to filtrable viruses, hysteria and neurasthenia have been withdrawn from the section on the nervous system and placed in that on psychologic medicine. In the index, which is exceptionally good (153 pages for 1,883 pages of text) reference to prontosil for streptococcal infections is found, while on the page referred to prontosil is not mentioned but there is a brief reference to "sulphonamide." It might be pointed out that many of the electrocardiograms could be improved on so far as reproduction is concerned. It is noted also that under treatment of gonococcal arthritis no mention is made of hyperpyrexia, which, at least up to the time of sulfanilamide, was the most promising form of therapy. Too much criticism of this book, however, would be invidious, since it is well written, exceptionally complete, and easily used as either a textbook or a reference book.

The Spectacle of a Man. By John Colquhoun. Cloth. Price, \$2.50. Pp. 252. New York: Jefferson House (William Morrow & Co., Inc.), 1937.

This is a novel about a man whose excessive, pathologic shyness, increased by stuttering and stammering since childhood, made it impossible for him to establish any satisfactory relationships with men and women, resulting in almost complete withdrawal from normal social intercourse and a sense of great inferiority and unhappiness. The author shows how, through psychoanalytic therapy, the patient is freed from the tyrannical domination of his unconscious infantile emotions and cravings and in consequence is able to live a freer and fuller affective life. In working out the psychodynamics, the *oedipus* situation in its simplest and most classic form is utilized. Only a relatively small part of the book occupies itself with the actual analysis. By far the largest portion is devoted to a description of the patient's actual life during the analytic months. Writing for the intelligent lay reader, the author has wisely refrained from the use of technical terminology and involved psychologic interpretations. In simple language, without resorting to sensational and melodramatic situations, he works out the psychodynamics in a sufficiently valid and convincing manner. He does not pretend to describe an orthodox or scientifically correct analysis and almost entirely neglects except for brief references, the transference situation. These technical deviations, including the use of a diary during analysis, in no way detract from the value of the book, the purpose of which is manifestly to give a nonclinical description of a neurosis and its treatment, in novel form for the lay reader. Many passages, devoted to intellectual psychologizing, are somewhat dull and slow and could probably be condensed.

Disease and the Man By Roger F. Lapham A.B. M.D. Cloth Price \$9 Pp 143 New York Oxford University Press 1937

We are accustomed to hearing the older generation of physicians lament the passing of the "art" of medicine and deplore the increasing dependence on indirect methods of examination with consequent failure to cultivate the senses by painstaking direct examination. Too often, we have been told, anamnesis is supplanted by a laboratory report. In the book under review a similar thesis is challengingly presented by one of our younger physicians, who has completed comparatively recently his medical course and hospital training. Dr. Lapham so forcefully presents the paramount importance of the patient and of the personal relationship of the doctor that his title might well have been transposed "The Man and the Disease." In an early chapter the spirit of the true physician is accurately portrayed. History taking and the physical examination are vividly described with illustrative cases to demonstrate their significance. Suggestions for the follow up and for controlling patients are similarly reinforced and enlivened by circumstantial anecdotes drawn from his own experience. Two illuminating chapters deal with that ever present problem the neurotic patient. Dr. Lapham concludes with the statement "it is the sincere hope of the author that a consideration of this discourse may help us to recognize the practice of medicine as a problem which embraces infinitely more than just a cold science of treating disease." No recent work so deftly discloses the man who must be treated rather than abstract pathology.

Quelques vérités premières (ou soi disant telles) en oto-rhino-laryngologie Par Marcel Ombredanne oto-rhino-laryngologiste des hôpitaux de Paris. Collection publiée sous la direction de MM. L. Ombredanne et A. Fleissinger. Boards. Price 24 francs Pp 86 Paris Masson & Cie 1937

In his preface the author states that, while there are many disputable conceptions regarding theories of pathogenesis, some clinical facts and some therapeutic results seem to be definitely settled. In this little brochure Ombredanne considers important points relative to the nose, nasal sinuses, larynx, trachea, esophagus and ear as well as the various methods of examination, such as bronchoscopy, covering them in the course of eight chapters. The discussions under various headings and sub-headings are in the nature of short statements resembling aphorisms. Attention is called to only the most important facts, and many epigrammatic statements refer to various essential facts, such as the warning with regard to the danger of infection at the entrance of the nose or upper lip and the possibility of extension by way of septic thrombophlebitis to the interior of the cranium and the consequent septicemia and death. The author warns against manipulation of the furuncle which is the primary lesion. This little book is valuable to the otolaryngologist but one must remember that oversimplification is not suitable for those who have not already thoroughly mastered the principles of the specialty and have had a reasonable degree of practical experience. This brochure is written and the subject is presented in the clear, concise manner so characteristic of good French writers. It will well repay the practicing otolaryngologist and especially the teacher of this subject to refer frequently to this work.

Accepted Dental Remedies Containing a List of Official Drugs Selected to Promote a Rational Dental Materia Medica and Descriptions of Acceptable Nonofficial Articles 1937. Edited by Samuel M. Gordon Ph.D. Secretary Council on Dental Therapeutics. Cloth Price \$1 Pp 265 Chicago American Dental Association 1937

This is the first revision published in two years of the list of pharmaceutical articles that have been accepted by the Council on Dental Therapeutics. The list has been thoroughly revised and the information on the official drugs brought in line with the recently published eleventh edition of the U. S. Pharmacopeia and the sixth edition of the National Formulary. The 1937 edition reflects the position of the Council on Dental Therapeutics on the abrasiveness of dentifrices and gives for each dentifrice listed as acceptable, statement of its composition and of the source and kind of insoluble materials in it and of the abrasiveness of the finished dentifrice. Special mention is made of the revisions of the chapters on calcium compounds, epinephrine cod liver oil, opium derivatives local anesthetics and atropine preparations. The plan of this book follows the

plan of two publications of the Council on Pharmacy and Chemistry of the American Medical Association—Useful Drugs and New and Nonofficial Remedies—and credit is given to the Council on Pharmacy and Chemistry for material from its publications which have been adapted in this book to the needs of dentists.

A Textbook of Surgical Nursing By Henry S. Brookes Jr. M.D. Instructor in Clinical Surgery Washington University School of Medicine St. Louis. Cloth Price \$3.50 Pp 636 with 233 illustrations. St. Louis C. V. Mosby Company 1937

If it were not for the three chapters pertaining to the duties of the operating room nurses, the various surgical procedures nurses should know and the diets for surgical patients, the remaining twenty-eight chapters might well be called an abbreviated textbook of surgery. This purpose the book fulfills with unusual completeness. It covers general and special surgery briefly but accurately, including the genito-urinary system and gynecologic surgery as well as the surgery of bones and joints. The book is well written in a clear simple style. It is excellently and abundantly illustrated. With a change of title to Textbook of Surgery for Nurses, it may well be recommended for the purpose intended.

Diabète et chirurgie Par H. Chabanier et C. Lobo Onell. Avec la collaboration de Mlle E. Lellu. Préface du Dr. M. Robinet. Paper Price 22 francs Pp 168 Paris Masson & Cie 1936

This is probably the most extensive clinical and laboratory treatise dealing with all the medical phases that come up in the control of a diabetic state before and during surgery. The underlying theme of the treatment is saline solution from 10 to 20 Gm. insulin and dextrose intravenously. The point in which this differs from the American publications is the stress which the authors lay on the administration of salt in hypertonic solutions. Their experiments as well as their clinical data sound convincing. The authors cover the world literature and the book is well worth while for those who have to deal with surgery and diabetes. The author has paid close attention to detail, which is the criterion of his successful therapy.

Textbook of General Physiology By T. Cunliffe Barnes D.Sc. Assistant Professor of Biology Yale University. Cloth Price \$4.50 Pp 554 with 166 illustrations. Philadelphia P. Blakiston's Son & Co. Inc. 1937

Barnes has given a new and fresh point of view in general physiology. Since the publication of Bayliss's Principles of General Physiology, this is the first book in English to give a significantly improved approach. The author himself is a prolific contributor to the field of general physiology, especially in the fundamental problems of water metabolism, and his chapters on physical chemistry applied to physiology are especially valuable. Of 477 pages, 267 are devoted to such topics. There has not been a more intelligent or more comprehensive biologic treatment of these questions in any language. There is a large and valuable bibliography, and the book is well indexed. The illustrations are ingenious and many, particularly the diagrammatic ones, are original.

Unreife und Lebensschwäche Von Prof. Dr. Albrecht Pelpel. Boards Price 6.80 marks Pp 103 with 10 illustrations. Leipzig Georg Thieme 1937

This monograph concerns itself with the physiologic and clinical aspects of prematurity and immaturity. The author believes that the conventional boundary of maturity, 2,500 Gm. birth weight, is too high and should be 2,000 Gm. He then discusses the incidence of and basis for prematurity and immaturity. Growth, body chemistry and metabolism are next discussed and differences between the mature infant are discussed. Then follow concise discussions on hormones, ferments, nutrition, circulation and respiration. Clinical disorders associated with prematurity and immaturity are then discussed. The concluding discussion concerns itself with the management and care of the premature. The monograph is concise but covers the subject comprehensively. Few original data are found in the work, but the author handles his material well. The bibliography is extensive but is confined almost entirely to European literature. The book has merit as a terse but comprehensive summary of physiologic and clinical aspects of prematurity and immaturity.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Workmen's Compensation Acts Death from Malignant Endocarditis in Relation to Industrial Injury—In the course of his employment on March 9, the workman fell down a stairway, apparently hitting his right hip. Two or three hours later he was forced to quit work. The day after the accident his attending physician found him suffering pain in the pelvic region. After remaining at home for five days, the workman returned to work a few days but eventually had to cease his employment altogether. The attending physician was called again May 9 and found the patient suffering from "terrific chills and fever," and subsequently a diagnosis of "generalized septicemia undoubtedly from a heart lesion" was made. The workman was hospitalized and given five or six transfusions. He died June 30 from "malignant endocarditis with generalized septicemia." The workman's compensation commission of Utah denied his widow compensation and she appealed to the Supreme Court of Utah.

The attending physician first testified that he could see no connection between the accident and the death. Later on, however, he testified that "we know he had septicemia and we know he had a very pronounced mitral insufficiency," that a fall could have "jarred loose some of the bacteria on the heart valves and thrown them loose in the blood stream," and that the industrial accident could have therefore been a contributing factor in the death. If the workman had not had a fall, this witness testified, he would not have died at the time he did. The testimony in this case, said the Supreme Court, certainly would have supported an award in favor of the widow, in fact, it seemed to show rather decidedly that the fall aggravated a preexisting condition. Yet it was for the industrial commission to decide the relationship between the accident and the death. There was only one physician who testified and he gave conflicting opinions. He thus evidenced uncertainty as to the real cause of death. Under such circumstances, in the opinion of the court, the finding of the commission was not arbitrary. The order of the commission denying compensation was affirmed.—*Holbrook v Industrial Commission (Utah)*, 67 P (2d) 224

Right of a Physician to Refuse to Testify Unless Paid a Special Fee—One Lillian Taves sued the Safeway Cab Transport & Storage Company to recover damages for personal injuries. Prior to the trial, at the instance and request of the company, Dr Opie W Swope, a physician specializing in radiology, took some roentgenograms of her injured arm. On the morning of the day of trial, the husband of the injured woman called on Dr Swope for the purpose of getting him to testify for his wife. Dr Swope agreed to do so on condition that his appearance as a witness would be satisfactory to the company that had employed him to take the roentgenograms and on condition that he be paid the customary expert witness fee of \$25, to be paid when he arrived at the courtroom. Apparently the stipulation with respect to the fee was agreed to. In any event Dr Swope appeared at the trial in answer to a subpoena duces tecum, bringing the roentgenograms with him. The special fee, however, was not paid and Dr Swope refused to testify. The court directed him to take the witness stand, which he did under protest. He was asked to produce the roentgenograms and he refused. He likewise refused to testify unless his special fee was paid. The court thereupon found him guilty of contempt of court, fined him, and ordered him committed to jail until the fine was paid. Dr Swope instituted proceedings for a writ of habeas corpus and when his application for the writ was denied, he appealed to the Supreme Court of Kansas.

The question, said the Supreme Court, whether an expert witness may be compelled to testify if special compensation has not been paid him has been considered in many cases. In

some of the states there are statutory provisions which permit the trial court to fix such compensation. There is no such statute in Kansas. The general rule as to compelling an expert witness to testify is stated in 70 C J 75, as follows:

The more general rule is that, apart from statute, an expert witness may be compelled to testify as to matters of a professional opinion, or matters to which he has gained a special knowledge by reason of his professional training or experience, without any compensation other than the fee of an ordinary witness, and his refusal to testify unless paid an extra compensation may be punished as contempt.

The present case, the court said, does not present a situation where the witness, at the suggestion of the party calling him, did anything by way of preparation to testify, neither does it present any situation where there was any attempt to compel him by any order of the court to prepare himself to testify. The professional services of the witness were rendered at the request and cost of a person other than the one calling him to testify. It was contended that Dr Swope refused to produce the roentgenograms which the subpoena had compelled him to bring because he anticipated that he would be asked to express his professional opinion based on them. Assuming that to be true, the court said, Dr Swope was not warranted in refusing to produce the roentgenograms, nor would he have been warranted in refusing to answer questions based thereon.

There are experts of many kinds, professional as well as lay. Many men are experts in certain lines of endeavor. If physicians, dentists, lawyers and engineers may refuse to testify concerning matters on which they may have opinions due to their respective trainings, simply because special fees have not been paid them, then a person qualifying as an expert shoe repairer may not be compelled to state what was the matter with shoes he repaired unless a special fee is paid him. It can readily be seen, the court said, that such a situation would be intolerable. It would tend to permit those who could afford it to produce witnesses whose testimony might be said to be expert and would prevent those without requisite means of the benefit of such testimony. We are not referring, the court said, to that class of cases where special preparation is required as a condition precedent to testifying but to those where the witness is interrogated as to facts and opinions which he knows and has without such special preparation. In the absence of a statute authorizing the trial court to fix expert witness fees, or permitting the witness to refuse to testify until a stipulated fee has been paid, the court was not disposed to hold that a witness claiming to be an expert called on to give expert testimony may refuse to testify unless his demands have been met.

The court concluded, therefore, that the witness was not justified in his refusal to produce the roentgenograms and to testify and the judgment of the trial court denying the application for a writ of habeas corpus was affirmed.—*Swope v State (Kan)*, 67 P (2d) 416

Society Proceedings

COMING MEETINGS

- Annual Congress on Medical Education and Licensure Chicago Feb 14-15 Dr W D Cutter 535 North Dearborn St Chicago Secretary
- American Academy of Orthopedic Surgeons Los Angeles Jan 16-20 Dr Carl E Badgley 1313 East Ann St Ann Arbor Mich Secretary
- American Student Health Association Chicago Dec 30-31 Miss Ruth F Boynton University of Minnesota Medical School Minneapolis Secretary
- Eastern Section American Laryngological Rhinological and Otolological Society Philadelphia Jan 7 Dr Louis H Clerf 1530 Locust St Philadelphia Chairman
- Middle Section American Laryngological Rhinological and Otolological Society St Louis Jan 26 Dr James B Costen Beaumont Bldg St. Louis Chairman
- Society of American Bacteriologists Washington D C Dec 28-30 Dr I L Baldwin College of Agriculture University of Wisconsin Madison Wis Secretary
- Southern Section American Laryngological Rhinological and Otolological Society Atlanta Ga Jan 24 Dr Murdock S Eguen 144 Ponce de Leon Ave. N.E Atlanta Ga, Chairman
- Western Section American Laryngological Rhinological and Otolological Society Santa Barbara Calif Jan 29-30 Dr Arthur C Jones East man Bldg, Boise Idaho Chairman

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers in continental United States and Canada for a period of three days. Periodicals are available from 1927 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them. Titles marked with an asterisk (*) are abstracted below.

American Journal of Anatomy, Philadelphia

62 1 178 (Nov.) 1937

- Microscopic Studies of Living Thyroid Follicles Implanted in Transparent Chambers Installed in Rabbit's Ear R G Williams Philadelphia—p 1
- Cellular Components of Mammalian Islets of Langerhans T B Thomas Exeter N H—p 31
- Observations on Isolated Lymphatic Capillaries in Living Mammal E R Clark and Eleanor Linton Clark Philadelphia—p 59
- Summary of Data for Effects of Ovariectomy on Body Growth and Organ Weights of Young Albino Rat C B Freudenberg and E I Hashimoto Salt Lake City—p 93
- Nasal Mucosa and Subarachnoid Space W M Faber Madison Wis—p 121
- Developmental Transformations of Aortic Arches in Calf (*Bos Taurus*) with Especial Reference to Formation of Arch of Aorta W S Hammond Ithaca N Y—p 149

American Journal of Cancer, New York

31 183 358 (Oct.) 1937

- Sarcoma of the Breast S Sailer New York—p 183
- Carcinoma Osteogenic Sarcoma Malignant Mixed Tumor of Chest Wall Report of Case J W Budd and F J Breslin Los Angeles—p 207
- Diffuse Neurofibromatosis Involving Cranial Peripheral and Sympathetic Nerves Accompanied by Tumor of Hypothalamus Case E E Aegerter and L W Smith Philadelphia—p 212
- *Correlation Between Serum Phosphatase and Roentgenographic Type in Bone Disease Helen Quincy Woodard and N L Higinbotham, New York—p 221
- Life Expectancy and Incidence of Malignant Disease II Carcinoma of Lip Oral Cavity Larynx and Antrum C E Welch and I T Nathanson Boston—p 238
- Origin of Certain Hereditary Tumors in *Drosophila* Mary B Stark New York—p 253
- Relation Between Nuclear Division and Ammonia Metabolism of Growing Tissues J Litter Beula B Marble and W T Salter Boston—p 268
- Transmission of Leukemia of Mice with Single Cell J Furth and M C Kahn with assistance of C Breedis New York—p 276
- Significance of Ascorbic Acid (Vitamin C) for the Growth in Vitro of Crocker Mouse Sarcoma 180 J P M Vogelaar and Eleanor Erlichman New York—p 283
- Primary Myxosarcoma of Liver N Evans and H J Hoxie Los Angeles—p 290
- Incidence of Malignant Neoplasms in Unselected Autopsy Material from Haiti C V Weller Ann Arbor Mich—p 295

Serum Phosphatase in Bone Disease—Woodard and Higinbotham determined the serum phosphatase by the Bodansky method in 203 persons with normal, benign and malignant conditions of the bone. Their estimations appear to warrant the following conclusions: 1 If a high serum phosphatase is found associated with an osteoplastic lesion or a normal serum phosphatase with an osteolytic lesion, the phosphatase determination has served only to confirm the diagnosis made by roentgenogram. 2 If a normal serum phosphatase is found associated with an osteoplastic lesion, the process is probably slow growing and relatively benign. 3 If a high serum phosphatase is found associated with an osteolytic lesion, the case may be one of hyperparathyroidism, there may be osteoplastic disease elsewhere in the body, the case may be one of a group made up chiefly of endotheliomas or carcinomas of diverse origin, metastatic to bone which raise the serum phosphatase level, but for some unknown reason do not form new bone, or the case may be an early highly malignant osteogenic sarcoma. 4 Follow-up determinations of the serum phosphatase in cases with an initially elevated phosphatase may predict the development of metastases after the extirpation of the primary tumor but cannot be depended on to do so. 5 Determinations of serum phosphatase in cases of bone tumors which have been treated by roentgen or gamma rays are useful in indicating the degree and permanence of the inactivation caused by irradiation. 6 While the presence of a normal serum phosphatase gives no assurance that disease of the bone is absent, the presence of a persistently elevated

serum phosphatase in a patient who is not jaundiced and who is not under treatment with Coley's toxins is a strong indication that disease of the bone is present and should never be disregarded.

American J Digest Dis & Nutrition, Fort Wayne, Ind

4 545 630 (Nov.) 1937

- Adrenal Cortex and Intestinal Absorption F Verzar Basel Switzer land—p 545
- The Physiologic Control of Gastric Acidity C M Wilhelmj R W Finegan and F C Hill Omaha—p 547
- Anoxemia Used as a Means of Analyzing the Structure and Functions of the Nervous System of the Bowel W C Alvarez Rochester Minn—p 550
- Studies on Gastric Hunger Mechanism II Inhibitory Effect of Dextrose Solutions I A Manville and W R Munroe Portland Ore—p 561
- Peptic Ulcer Therapy M B Levin Baltimore—p 574
- The Cholesterol Problem H W Soper St Louis—p 577
- *Hypoglycemia Study of 404 Patients Who Had No Insulin and Had This Common Finding L Martin and G Hellmuth with assistance of M L Muth Baltimore—p 579
- The Relation of the Hydrogen Ion Concentration of Bile to Formation of Gallstones R E Dolkart K K Jones and C F G Brown Chicago—p 587
- Is Uremia an Allergic Manifestation? S K Robinson Chicago—p 591
- Observations on Nature of Heartburn A M Babey Brooklyn—p 600

Hypoglycemia—Martin and Hellmuth reviewed the available histories of patients in the Johns Hopkins Hospital in whom hypoglycemia was discovered. The blood sugar in 341 patients, uninfluenced by injection of insulin, was found at some time to be below 70 mg per hundred cubic centimeters, also in sixty-three patients the blood sugar was in the seventies. Hypoglycemia has been found to be associated with a large number of pathologic conditions. In these conditions symptomatic pathognomonic of hypoglycemia were found in 89 per cent of the cases and suggestive symptoms were present in 20 per cent. In patients with symptomatic functional hypoglycemia, symptoms may appear at a higher level of blood sugar than in patients with a recognizable basis for their hypoglycemia. Except for the cases of symptomatic functional hypoglycemia and of epilepsy there are relatively few other instances in which patients with definite symptoms of hypoglycemia had no recognizable basis for their hypoglycemia. A number of laboratory and clinical data could not be correlated with hypoglycemia. There are individuals with symptoms of hypoglycemia of unexplained etiology whose diagnosis should be 'symptomatic functional hypoglycemia'. Many individuals become accustomed to or do not react to a lowered blood sugar that would produce symptoms in others, as in hypoglycemia arising from an organic basis. A lowered blood sugar concentration should not be accepted as a cause of that vague symptom complex which is especially typified by the psychoneurotic individual.

American Review of Tuberculosis, New York

36 577 710 (Nov.) 1937

- Evolution of Dispensary Control of Tuberculosis Historical Aspects J H Elliott Toronto—p 577
- Clinic Standards and Clinic Practice H R Edwards New York—p 592
- Tuberculosis Case Finding in a Consultation Chest Service for Private Physicians I Steinberg and Margaret W Barnard New York—p 602
- The Public Health Aspect of Tuberculosis Sanatorium C Bush Livermore Calif—p 613
- Practice in Tuberculosis Clinics in the United States Analysis of Data Obtained by Questionnaire in Survey of Tuberculosis Clinics M Nelson New York—p 619
- Virulence of Bovine Tubercle Bacilli Variations Depending on the pH of Culture Medium K C Smithburn New York—p 637
- Histopathology of Experimental Tuberculosis Lesions Induced by Bovine Tubercle Bacilli of Varying Degrees of Virulence K C Smithburn New York—p 659
- Hematologic Studies in Experimental Tuberculosis Variations in Blood Cells of Rabbits Inoculated with Cultures Differing in Virulence K C Smithburn F R Sabin and L E Hummel New York—p 673
- *Histopathologic Basis for X-Ray Diagnosability of Pulmonary Military Tuberculosis P E Steiner Chicago—p 692
- Noncasing Tuberculosis Preliminary Report M Pinner Oneonta N Y—p 706

X-Ray Diagnosability of Military Tuberculosis—Steiner made a study of the correlation between the histologic structure of military tubercles and their x-ray diagnosability during life and compared the importance of the histologic make-up with the factors of the size and the number of tubercles in producing shadows. An effort was made to keep the study as objective as possible by using actual measurements

and by submitting data to statistical analysis whenever possible. Fifteen cases of generalized milary tuberculosis examined post mortem by various members of the department of pathology of the University of Chicago and thirty-one cases examined by pathologists at the Children's Memorial Hospital of Chicago were studied. A comparison of the roentgenograms with the number, the average size and the histologic structure of the tubercles in the lungs revealed the latter factor to show the best correlation with the x-ray appearance. The antemortem roentgenograms were negative in all cases in which the tubercles were epithelioid, whereas, in cases with tubercles containing caseous material or collagen or both, the roentgenograms were usually positive. The chemical explanation for this observation is not known. None of the tubercles contained visible calcium on the routine stains and micro-incineration of tubercles of the various histologic types revealed no significant quantitative difference in the ash. By using softer x-rays or by selective filtration of x-rays of certain wavelengths, epithelioid tubercles might produce positive roentgenograms.

Archives of Internal Medicine, Chicago

60 735 948 (Nov.) 1937

- Pneumonia Due to *Bacillus Friedlanderii*. Report on Forty One Patients with Consideration of Specific Serum Therapy. J. G. M. Bullowa, J. Chess and N. B. Friedman. New York—p. 735.
- Hyperinsulinism. Final Report of Case Including Necropsy Observations. E. Ziskind, W. Bayley and E. F. Mauer. Los Angeles—p. 753.
- Role of Arteries in Peripheral Resistance of Hypertension and Related States. Enid Tribe Oppenheimer and M. Prinzmetal. New York—p. 772.
- Histioid Disease. Clinical Laboratory and Roentgenographic Observations. M. F. Godfrey. Sydney, Australia—p. 783.
- Adrenals and Experimental Pancreatic Diabetes. J. M. Rogoff and H. W. Ferrill, with assistance of E. A. Nixon. Chicago—p. 805.
- *Weil's Disease. Report of Seven Cases. A. R. Gaines and R. P. Johnson—p. 817.
- Influence of Fat on Concentration of Sugar in Blood and in Urine in Diabetes Mellitus. M. Wisniewski, A. P. Kane and W. C. Spitz. Brooklyn—p. 837.
- *Chronic Arsenical Poisoning During Treatment of Chronic Myeloid Leukemia. E. V. Kandel and G. V. LeRoy. Chicago—p. 846.
- Dermatologic Manifestations of Lymphoblastoma Leukemia Group. E. Epstein. Oakland, Calif. and Katherine MacEachern. Los Angeles—p. 867.
- Metabolism of Sodium d-Lactate. I. Utilization of Intravenously Injected Sodium d-Lactate by Normal Persons. L. J. Soffer, D. A. Dantes, R. Newburger and H. Sobotka. New York—p. 876.
- Id. II. Utilization of Intravenously Injected Sodium d-Lactate by Patients with Acute Diffuse Parenchymal Injury of Liver. L. J. Soffer, D. A. Dantes, R. Newburger and H. Sobotka. New York—p. 882.
- Syphilis. Review of the Recent Literature. P. Padgett and I. E. Moore. Baltimore—p. 887.

Weil's Disease.—Gaines and Johnson review the pertinent literature on Weil's disease and describe the important symptoms in the thirteen cases reported previously in North America and of their series of seven cases. The relationship of Weil's disease to infectious jaundice is discussed. The diagnosis and treatment are considered, with particular attention to their results of treatment with neosarsphenamine intravenously and convalescent whole blood and serum intramuscularly. The most unusual feature was the typical painless obstructive jaundice of eight months' duration noted in the second patient at the time of his admission to the hospital. Operation and necropsy in this case revealed complete inflammatory atresia of the intramural portion of the common bile duct secondary, presumably, to Weil's disease. The third patient showed an afebrile course, and leptospirae were demonstrable in the blood by dark-field examination for nine weeks. The fourth patient also was afebrile throughout, and leptospirae were demonstrable for five weeks. The fifth patient appears to be the only woman with Weil's disease in the North American literature, except in one instance of accidental laboratory infection. The seventh patient showed an afebrile course and was ambulatory for a period of eight months before the diagnosis was made, cholecystectomy was performed during this period without benefit. Six of these cases were diagnosed during a period of six months, indicating that this condition may not be rare. The disease should be considered more often when there is unexplained jaundice.

Arsenical Poisoning During Treatment of Leukemia.—Kandel and LeRoy describe a case of chronic myeloid leukemia in which intensive treatment with solution of potassium arsenite and x-rays was given and in which cutaneous and

hepatic lesions due to the arsenic developed. The results of arsenic therapy of five other patients with chronic myeloid leukemia who showed certain features of this form of treatment are included. Five of the six patients presented at one time or another in the course of treatment complications (herpes zoster, cirrhosis, keratosis, polyneuritis, erythema, portal fibrosis and ascites) known to result from arsenic. All these patients after taking the drug for longer than five or six months complained of a chronic cough, and examination of the chest frequently disclosed moist rales. Since many patients readily tolerate enough arsenic to produce these complications without suffering unduly from the minor so-called subtoxic symptoms of conjunctival and nasal congestion and gastrointestinal disorders, the therapeutic principle is obvious. A patient should not be permitted to dose himself to his idea of tolerance with solution of potassium arsenite over long periods without medical supervision. The possibility that ascites is due to the therapy should be remembered and when it occurs a long rest period, with administration of diuretic drugs, is indicated. If keratosis appears, permanent interdiction of arsenic is not indicated. Rather, the drug should be discontinued until the soreness leaves and then begun again cautiously. If the leukocyte count does not stay at a low level during the rest periods but rises so rapidly that solution of potassium arsenite must be taken almost continuously, roentgen therapy should be given. Arsenic therapy and roentgen therapy are not antagonistic and a remission of leukocytosis may be induced with arsenic as soon as the postirradiation decline of the leukocyte count ceases. Also, years of arsenic medication do not render a patient resistant to roentgen therapy. The employment of the twenty-one day cycle of increasing doses of solution of potassium arsenite, followed by twenty-one days of rest, seems to be the most satisfactory method of giving the drug. With control of the course by making frequent leukocyte counts especially at the onset of treatment, necessary adjustments of the doses are readily made. In cases of typical chronic myeloid leukemia the outlook is best when the hemoglobin and erythrocyte counts can be kept at the highest level. Vigorous effort to attain an approach to normality in this respect is important.

Archives of Pathology, Chicago

24 537 702 (Nov.) 1937

- Relation of Paralytic Shellfish Poison to Certain Plankton Organisms of the Genus *Gonyaulax*. H. Sommer, W. F. Whedon, C. A. Kolod and R. Stohler. San Francisco—p. 537.
- Paralytic Shellfish Poisoning. H. Sommer and A. F. Meyer. San Francisco—p. 560.
- *Development of Local Cellular Reaction to Tuberculin in Sensitized Calves. W. H. Feldman. Rochester, Minn. and C. P. Fitch. St. Paul—p. 599.
- Cholesterol Induced Arteriosclerosis in Rabbits with Variations Due to Altered Status of Thyroid. F. R. Menne, J. A. P. Beeman and D. H. Laby. Portland, Ore.—p. 612.
- Shock. Its Mechanism and Pathology. A. H. Moon. Philadelphia—p. 642.

Local Cellular Reaction to Tuberculin.—Feldman and Fitch made a histologic study of the changes in the tissues which follow intracutaneous injection of tuberculin into experimentally sensitized calves. The study included nine calves which were infected with bovine tubercle bacilli and two control calves which were not infected. After the lapse of fifty-eight days, the usual diagnostic dose of mammalian tuberculin was injected into the derma of each caudal fold of each calf. Starting at the third hour after the tuberculin was introduced and continuing at intervals to the twenty-eighth day, portions of the respective caudal folds were removed for biopsy. The essential histologic features were as follows. The reactive process gave evidence of a constant predilection for the perivascular and perineural tissues. During the early phases of the reactive process polymorphonuclear leukocytes were numerous. Eosinophilic granulocytes and histiocytes were in the minority. A histiocytic or mononuclear cellular reaction gradually replaced the polymorphonuclear leukocytes and dominated the picture, beginning at the sixtieth or the seventy-second hour. Edema appeared early in the reaction and disappeared between the fifth and seventh days. Certain endovascular changes including thrombosis and endarteritis occurred. Resolution of the cellular reaction had not occurred after twenty-eight days. The injection of tuberculin into the skin of nonsensitized calves failed to provoke demonstrable changes.

Arkansas Medical Society Journal, Fort Smith

74 105 130 (Nov.) 1937

- New Method for Administration of Whole Blood Transfusions A M Elton Newport—p 105
Report on Use of Insulin in Treatment of Schizophrenia N T Hollis Little Rock—p 107
Prevention and Treatment of Puerperal Sepsis R C Shanley Jonesboro—p 113

Canadian Medical Association Journal, Montreal

37 415 524 (Nov.) 1937

- The Physical Welfare of the Dionne Quintuplets A R Dafoe Calander Ont and W A Dafoe Toronto—p 415
Abstracts of Studies on Development of Dionne Quintuplets W E Blatz Toronto—p 424
*Attempt to Inhibit Development of Tar Carcinoma in Mice (Third Report) Effects of Vitamins on Tumor Threshold J R Davidson Winnipeg Manit—p 434
Immediate Treatment of Facial Fractures S Gordon Toronto—p 440
Osteomyelitis of Superior Maxilla in New Born Infants A Goldbloom and H L Bacal Montreal—p 443
Atrophic Rhinitis The Constitutional Factor Treatment with Estrogenic Hormones H Mortimer R P Wright and J B Collip Montreal—p 445
Observations on Experimental and Clinical Use of Sulfanilamide in Treatment of Certain Infections P H Long and Eleanor A Bliss Baltimore—p 457
Essential Cardiovascular Hypertension as Revealed in Examination of Fundus Oculi F T Tooke and J V V Nicholls Montreal—p 466
Pentothal Sodium as Hypnotic in Obstetrics F L MacPhail H R D Gray and W Bourne Montreal—p 471
Neonatal Mortality A Study of an Eleven Year Period of Obstetrics in a Small City J H Duncan Sault Ste Marie Ont—p 474
Dermatologic Neurosis W R Jaffrey Hamilton Ont—p 478
Radiologic Education W A Jones Kingston Ont—p 480
Treatment of Gonorrhea by Hyperpyrexia in General Practice W H Avery Toronto—p 482
*Treatment of Epilepsy in Children H M Keith Montreal—p 485

Development of Tar Carcinoma in Mice—Having observed for six years more than 600 mice in which tar carcinoma was produced and inhibited, it seems to Davidson to be fairly well demonstrated that the tumor threshold of the mouse can be lowered by tar irritation and raised or maintained at a fairly constant level by breeding and diet, with varying dosages of vitamins administered in the diet (especially those associated with reproduction A B and C). A distinct difference is observed in the condition of the control groups on the two different vitamin diets. The following information obtainable with the completion of this series on the death of all the experimental mice, will be of help in adjusting vitamin dosage (1) whether the present vitamin dosage of the high vitamin diet will maintain the animal throughout life or will have to be increased with age and (2) to observe and compare the tumor threshold in different groups.

Treatment of Epilepsy in Children—A ketogenic diet producing large amounts of diacetic acid in the urine is a satisfactory method of treating epilepsy, particularly in children. Keith has treated 160 patients satisfactorily over a period of from one to nine years. Of these, 36 per cent remained entirely free from attacks of any type so far as is known to themselves or to their parents. 21 per cent were improved, having only an occasional attack, 43 per cent were not benefited although they carried out instructions fully. Therefore with the ketogenic diet alone one third of the epileptic children can be made free from seizures and from 50 to 60 per cent can be improved. A ketogenic diet, to be effective must be rigidly controlled and should be a weighed diet. It is necessary that in the diet the ratio of the ketogenic material to the antiketogenic be at least 3:1. For children the number of calories is 55 per kilogram, or 25 per pound of body weight. The amount of protein is set at 1 Gm per kilogram of body weight. The carbohydrate and the fat are then adjusted so that the ratio is as indicated and the calories are satisfactory for nutrition and growth. In using diet or medication one must not lose sight of the necessity for healthy outdoor exercise or adequate rest and general hygienic measures. For many years surgeons have attempted to treat epilepsy by different forms of surgical procedures. These methods are perhaps more often carried out in adults than in children. A tumor may produce convulsive attacks, and many tumors may now be removed with satisfactory results. However, first one must study the patient's history, the pattern of the seizures, the neurologic examination and

finally the encephalogram, to determine what area of the brain has been involved. If these all point in the same direction, it is then considered advisable to explore the suspected area of the cerebral cortex with electrical stimulation. If the focus is found as suspected, the area may often be removed with successful results.

Colorado Medicine, Denver

34 769 880 (Nov.) 1937

- Artificial Fever Therapy W M Simpson and H W Kendall Dayton Ohio—p 782
Pathogenesis and Clinical Management of Gastric and Duodenal Ulcer W L Palmer Chicago—p 796
Radiation Therapy in Nonmalignant Diseases Postoperative Parotitis K D A Allen Denver—p 799
Schilling Hemogram as Laboratory Aid in Diagnosis and Prognosis J J McGill Casper Wyo—p 844

Endocrinology, Los Angeles

21 711 860 (Nov.) 1937

- Studies on Corpus Luteum Function I. Urinary Excretion of Sodium Pregnenediol Glucuronide in Human Menstrual Cycle Eleanor Hill Venning and J S L Browne Montreal—p 711
Responses of Human Ovary to Gonadotropic Principles E C Hamblen and R A Ross Durham N C—p 722
Some Effects of Estrogens on Uterus of the Mouse W U Gardner and E Allen New Haven Conn—p 727
Composite Nature of Estrus Phenomenon S C Freed S D Mesniew and S Soskin Chicago—p 731
Effect of Graded Doses of Estrin on Pituitary Adrenal and Thymus Weights of Mature Ovariectomized Rats H Lauson C G Heller and E L Sevringhaus Madison Wis—p 735
*Excretion of Androgenic and Estrogenic Substances in Urine of Children R I Dorfman W W Greulich and C I Solomon New Haven, Conn—p 741
Induction of Penile Erection by Male Hormone Substances J B Hamilton Albany N Y—p 744
Testosterone and Testosterone Acetate and Protein and Energy Metabolism of Castrate Dogs C D Kocbakian Rochester N Y—p 750
Effect of Testosterone Testosterone Propionate and Dehydro-Androsterone on Secretion of Gonadotropic Complex as Evidenced in Parahybric Rats R Hertz and R K Meyer Madison Wis—p 756
Plasma Electrolyte Disturbance in Patient with Hypercortico Adrenal Syndrome Contrasted with That Found in Addison's Disease I McQuarrie R M Johnson and M R Ziegler Minneapolis—p 762
Creatinuria and Creatine Tolerance in Childhood with Especial Reference to Bone Age and Hypothyroidism E K Shelton and B N Tager Los Angeles—p 770
Effect of Thyroglobulin and Related Substances on the Oxygen Consumption of Liver in Vitro A Canzanelli and D Rapoport, with assistance of M Greenblatt and J R Lourie Boston—p 779
Effect of Thyroidectomy and Thyroid Feeding in Geese on Basal Metabolism at Different Temperatures M Lee and R C Lee Boston—p 790
Effect of Hypoglycemia on the Metabolism of the Brain H E Himwich and J F Fazekas Albany N Y—p 800
Effect of Splenectomy on Weight of Hypophysis of Albino Rat L F Edwards and C W Wright Columbus Ohio—p 808
Alterations in the Percentage of Cell Types in Hypophysis by Gonad Transplantation in the Rat C A Pfeiffer New Haven Conn—p 812

Excretion of Androgenic and Estrogenic Substances—To determine the presence of androgenic and estrogenic activity, Dorfman and his co-workers assayed the total excretion of urine, for periods varying between twenty-four and 168 hours, from eighteen boys and five girls from 6 to 16 years of age. Androgenic activity was found in the urine of all the children in amounts varying from 11 to 32 international units for twenty-four hours. The estrogenic activity observed ranged from less than 5 to 95 international units for the same period. The androgenic and estrogenic activities of the urines vary in puberal boys of the same chronological age. Since puberal girls of the same chronological age also differ markedly in the degree of their physical development, one may expect comparable differences in their hormone excretion. These considerations indicate the inadequacy of chronological age alone as a criterion of maturity. They emphasize also the need for caution in interpreting the results of assays of pooled samples of urine from children of the same chronological age, if the latter differ markedly in their developmental status. Because of this variation the assay values for the various age groups in the authors study are not necessarily the same as those which may be found for other children of the same age. Owing to the marked variation in the developmental status of children of the same chronological age the relationship of the excretion of the sex hormone more directly to the degree of physical maturity is being investigated.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

2 837 888 (Oct. 30) 1937

- Staphylococci Pathogenic for Man J W Bigger—p 837
 Treatment of Thrombocytopenic Purpura Janet M Vaughan—p 842
 Nervous Factor in Juvenile Asthma A K Clarkson—p 845
 *Blood Bromide Investigations in Psychotic Epileptics L Minski and J B Gillen—p 850
 *Treatment of Obstinate Edema by Multiple Punctures M Sein—p 852

Blood Bromide Investigations in Psychotic Epilepsy—Minski and Gillen estimated the blood bromides of thirty-two chronic epileptic psychotic patients and, although comparatively high levels were found in many cases, no obvious instances of true bromide intoxication showing delirious or confusional reactions were discovered. Reduction in the level of the bromide produced no appreciable change in the mental state and no marked increase in the number of fits, which were definitely reduced in eight cases.

Treatment of Obstinate Edema by Multiple Punctures—Sein believes that the mechanical removal of edema fluid by acupuncture is a useful addition to the therapeutic measures available for the treatment of obstinate edema. The method possesses several advantages over the use of Southey's tubes. The patient having been placed in the most comfortable position, the legs and feet are prepared as for an operation. From fifteen to twenty punctures are made with a triangular skin-needle on the inner aspect of the lower part of the legs and the dorsum of the feet. The needle is placed against the skin and quickly pressed into it, and the point is pushed obliquely upward into the subcutaneous tissue and withdrawn. Veins can be felt and avoided, but bleeding, if it occurs, is easily controlled by a little pressure. Fluid will flow out from the punctures and collect in the receptacle placed under the feet. If the ascites tends to diminish rapidly, it is advisable to apply an abdominal binder as after paracentesis. Light massage of the limbs may be employed to promote drainage and overcome the stiffness of the joints. When it is decided to stop the drainage, all that is necessary is to put the patient to bed and wrap the legs and feet in an absorbent dressing for two or three days while some oozing from the punctures remains.

Glasgow Medical Journal

10 137 192 (Oct.) 1937

- Prolegomena to Study of Therapeutics N Morris—p 137

Irish Journal of Medical Science, Dublin

No 142 617 654 (Oct.) 1937

- *Some Chronic Nontuberculous Pulmonary Conditions G T O'Brien—p 617
 Treatment of Melancholia in Private Practice R Thompson—p 626
 Ectopia Lentis Associated with Arachnoidactyly Case E Maxwell—p 632
 Corneal Transplantation in an Aphakic Eye J B McAreevey—p 635
 Abnormal Renal Artery Note T J D Lane—p 638

Some Chronic Nontuberculous Pulmonary Conditions—O'Brien cites some of the clinical and x-ray features of a group of patients suffering from nontuberculous diseases of the lungs. Such features are not rare and interesting, but their incidence should be considered. Three groups of cases are presented: the bronchiectatic, the indeterminate and the neoplastic. In a certain number of these patients the physical signs and general examination could lead to only one diagnosis, namely, pulmonary tuberculosis, but here is stressed the necessity for auxiliary aids to diagnosis in cases of pulmonary disease simulating tuberculosis when the bacillus of tuberculosis is repeatedly absent from the sputum, in "mirror tests" of expired air and in contents of gastric lavage.

J Royal Inst Public Health and Hygiene, London

1 164 (Oct.) 1937

- Significance of Nutrition to a Medical Officer of Health J W Starkey—p 11
 The Cost of Tuberculosis Schemes J B McDougall—p 22
 Mental Health and the Community Doris M Odium—p 35
 After Care and Reemployment of the Tuberculous Patient E L Sandland—p 46

Journal of Tropical Medicine and Hygiene, London

40 237 256 (Oct. 15) 1937

- Bronchomoniliasis R S Flinn and J W Flinn—p 237
 Morphology and Biology of Actinomyces Israeli (Kraus 1896) P Negroni and H Bonfiglioli—p 240
 Permanence of Biochemical Characters Used in Differentiation of Certain Species of Fungi J C Swartzwelder—p 246
 Use of Isolated Infective Flies in Transmission Experiments with Glossina morsitans and Trypanosoma Rhodesiense J F Corson—p 248

Lancet, London

2 891 948 (Oct. 16) 1937

- Physical Unfitness in Relation to Density of Population J Barcroft—p 891
 Reaction of Tarded Rabbits to Infectious Fibroma Virus (Shope) C H Andrews C G Ahlstrom L Foulds and W E Gye—p 893
 Use of Prontosil in Treatment of Gonorrhea T F Creau—p 895
 *Anemia and Agranulocytosis During Sulfanilamide Therapy G H Jennings and G Southwell-Sander—p 898
 Source of Androgenic and Estrogenic Substances of Urine A S Parkes—p 902
 Closed Ventriculography E F Skinner—p 903

Anemia and Agranulocytosis During Sulfanilamide Therapy—During the past two years since the introduction of prontosil, various similar compounds have been employed. Jennings and Southwell-Sander say that it is becoming evident that insufficient warning was given of the possible toxic effects of these drugs. There may occur cerebral disturbances, e.g., drowsiness, dizziness, headache and disorientation. Also described are alimentary symptoms, such as vomiting, the signs of irritation of the urinary tract and signs of peripheral sensory disturbance. An important toxic effect of this group of drugs is shown in the blood picture. Sulfhemoglobinemia and methemoglobinemia are the best known features of this. The authors' report is confined to the toxic effect of the drugs shown by the blood count, which revealed in one of their cases a complete agranulocytosis and in three others some degree of anemia with evidence of abnormal activity of the bone marrow. As is suggested by its chemical structure, *p*-aminobenzenesulfonamide (sulfanilamide, or prontosil album) is a potential marrow poison. The experience of others suggests that the new drugs related to sulfanilamide are likely also to have a similar action on the marrow. Both erythropoiesis and leukopoiesis may be depressed by sulfanilamide, and as is true of other of its compounds, it may act to a different degree on these two functions in the same individual. In considering treatment with these drugs, certain facts must be borne in mind. "Idiosyncrasy" may be present and result in the appearance of symptoms after the administration of a small quantity of the drug. Apart from any such dramatic abnormality in the response, symptoms of toxicity may appear after prolonged or intensive administration; the size of the dose required to cause such symptoms is variable. The general health of the patient may be of importance. The treatment should be guided whenever possible by blood counts. The appearance of immature erythrocytes or a leukopenia is an indication to pause in the therapy. Control of the blood picture is particularly desirable when intense or prolonged therapy (longer than two weeks) is projected.

Quarterly Journal of Medicine, Oxford

6 353 480 (Oct.) 1937

- Studies in Graves Disease Alterations in Gastric Secretion and Correlated Blood Changes Florence Louis and Lucy Wills—p 353
 The Psychologic Factors in Asthma Prurigo C H Rogerson—p 367
 Isolated Uncomplicated Dextrocardia D S Stevenson—p 395
 Huntington's Chorea in South Wales J Spillane and R Phillips—p 403
 *Lung Changes in Influenza J G Scadding—p 425
 Plasma Lipids in Diagnosis of Mild Hypothyroidism E M Boyd and W F Connell—p 467

Effects of Influenza on the Lung—Scadding made a clinical study of the changes in the lungs of fifty-eight patients with influenza admitted to Hammersmith Hospital in December 1936 and January 1937. The influenzal virus was isolated from four of these patients. Twenty-two cases presented abnormal pulmonary physical signs without x-ray evidence of consolidation. In the less severe cases of this group, areas of 'suppressed' breath sounds at the bases were the most distinctive physical signs. The more severe cases presented a clinical picture of edematous bases of the lungs and their gen-

eral aspect resembled that of patients with actual consolidation. Nineteen had actual consolidation. Of these, seven died. The characteristics of the signs of consolidation were extreme dullness to percussion, weak tubular or bronchial breath sounds and egophony. Bacteriologic studies of the sputums showed that the bacterial flora of the series as a whole was no different from that of the noninfluenzal sputums examined during the period of the epidemic. Analysis of the results according to the clinical grouping showed significant differences between the bacterial type distributions in the various groups: pneumococci, which were absent from the sputums of the group without evidence of pulmonary involvement, predominated in the group of those with consolidation. One case of fulminating 'influenzal' pneumonia, fatal on the third day, is described. In the lung both *Staphylococcus aureus*, in enormous numbers, and the virus were demonstrated. The difference between this series and the disease in pandemic times is one of degree rather than of kind. The influenzal virus can produce severe changes in the lung in man which facilitate invasion by bacteria. The course of the disease depends on the extent and virulence both of the virus and of the bacterial infection, the extraordinary variability of the clinical picture is due to the numerous possible combinations of these factors.

Bull of Health Org., League of Nations, Geneva

6 129 298 (April) 1937

Report on Work of Group of Experts Appointed to Study Methods of Assessing the State of Nutrition in Infants and Adolescents. Introduction. E. J. Bigwood—p. 129

Id. Recommendations Made by the Experts—p. 137

Id. Methods of Assessing the State of Nutrition of Children and Adolescents Considered in Relation to Defective Diet. E. J. Bigwood—p. 141

Prophylaxis of Typhus Fever and Vaccination Against That Disease. Introduction. Y. Biraud—p. 205

Id. Report on Consultation of Experts on Prevention of Typhus and Vaccination Against That Disease—p. 213

Serum Diagnosis of Enteric Fever. Report and Recommendations. A. Felix and A. D. Gardner—p. 223

Prevention of Malaria in the Field by Use of Quinine and Atabrine. Experiments in Clinical Prophylaxis. J. W. Field, J. C. Niven and E. P. Hodgkin—p. 236

Nutritive Requirements During the First Year of Life. Introduction. E. J. Bigwood—p. 291

Id. Recommendations Made by the Experts—p. 293

Chinese Medical Journal, Peiping

52 143 316 (Aug.) 1937

Study of 355 Cases of Peptic Ulcer. H. C. Chang and F. C. Chang—p. 143

*Acute Perforated Peptic Ulcer. Analysis of Thirty Seven Operated Cases. C. C. Chang—p. 161

Carcinoma of Stomach. Clinical Study of 108 Cases. K. C. Chen—p. 177

Gastric Resection. Indications. Technique and End Results. H. H. Loucks—p. 191

Electrosurgical Technique for Aseptic Anastomosis of Stomach and Intestine. Y. C. Chao—p. 211

The Jejuney Gastrostomy. H. C. Fang—p. 225

Carcinoma of Esophagus. Statistical Study. K. W. Kwan—p. 237

Traumatic Wounds of the Abdomen. S. T. Kwan and C. P. Yang—p. 255

Acute Perforated Peptic Ulcer—Chang considers the general data of peptic ulcer as observed at the Peiping Union Medical College and as a survey of the results of treatment. The incidence of peptic ulcer revealed by 2,000 consecutive necropsies was 17 per cent. The ratio between males and females suffering from this condition was 3.3:1. The incidence of perforation among the total number of patients with peptic ulcer admitted was 10.4 per cent, 13.2 per cent among the men and 1.2 per cent among the women. The third decade of life was the age of highest incidence and at least one third of all the perforations occurred before symptoms had been present for more than one year. More than 97 per cent of the perforations were located at or near the pylorus. The time elapsing between perforation and operation was the most important single factor affecting the prognosis. The mortality rose in direct proportion to the lapse of time up to the end of the second day, after which it declined slowly. Diffuse peritonitis, usually streptococcal, constituted the most fatal complication, whereas bronchopneumonia was the most frequent. Simple closure, excision and pyloroplasty, closure and gastro-enterostomy were the chief procedures employed in treatment. None

of these methods yielded strikingly different end results. The author favors simple closure and pyloroplasty in most instances rather than gastro-enterostomy. Primary partial gastrectomy is believed to carry a prohibitive mortality in the hands of the occasional operator, although excellent results have been reported by experienced surgeons. Careful postoperative care and prolonged medical management are essential in all instances. The end results of all types of therapy still leave much to be desired.

Archives de Medecine des Enfants, Paris

40 681 760 (Nov.) 1937

Clinical and Experimental Research on Malignant Diphtheria. A. Stroe and D. Hortopan—p. 681

*Large Doses of Strychnine in Treatment of Grave Diphtheria. G. Paiseau and P. Carrez—p. 710

*Serotherapy in Diphtheritic Paralysis. R. Cruchet and L. Ginestous—p. 725

Large Doses of Strychnine in Grave Diphtheria—Paiseau and Carrez report observations on the use of strychnine in grave diphtheria. Croup is the only contraindication to strychnine therapy. They emphasize that this treatment must be reserved exclusively for the grave forms and that strong doses can be employed only under careful medical supervision, which must be practically incessant. They use a 2:1,000 solution. The subcutaneous injections are given at three hour intervals. In cases in which moderate doses are given, five or six injections are used in the course of twenty-four hours, but to administer the strong doses, from seven to eight injections have to be given. In determining the doses, the tolerance of the subject as well as the gravity of the clinical form has to be considered. In the grave forms that are characterized by local signs of malignancy, extensive and perhaps fetid membranes and considerable cervical adenopathy, but in which generalized grave signs are absent, it is generally sufficient to administer 0.5 mg. of strychnine per kilogram of body weight in twenty-four hours. This dose must be reached in three or four days and may, if necessary, be increased to around 1 mg. With these doses the authors experienced not a single fatal accident. In the malignant anginas, in which the mortality is rather high, a dose of 1 mg. per kilogram of body weight for the twenty-four hour period is the minimum. After remarks about the so called supporting strychnine therapy for cases in which the diphtheria takes a rather slow course, the authors discuss associated treatments, pointing out that they always utilize the other classic treatments, such as total adrenal extract or epinephrine and especially ouabain, which is particularly helpful in case of appearance of signs of cardiac insufficiency. The use of digitalis preparations is advised against by some authors, since its association with strychnine supposedly increases the toxicity. Discussing the accidents of strychnine therapy and their treatment, the authors point out that in children the signs of intolerance to strychnine are not so characteristic as in adults. However, one of the signs that make advisable an arrest of the progression or a temporary reduction of the doses is the extension of the reflexogenic zones in the region of the knee reflexes. It is advisable to test these reflexes shortly before a strychnine injection is made.

Serotherapy in Diphtheritic Paralysis—Cruchet and Ginestous review the literature on serotherapy of diphtheritic paralysis. They cite Ferre's studies on avian diphtheria and show that these investigations became the basis of the serotherapy of diphtheritic paralysis. They differentiate two groups: (1) the associated paralyses, which develop in the course of the untreated or insufficiently treated cases of diphtheria, and (2) the isolated paralyses, which develop after the diphtheritic angina seems completely cured. In the latter cases the most frequent form of paralysis is that which ophthalmologists refer to as the paralysis of accommodation. They conclude that serum should be administered even in the isolated forms of diphtheritic paralysis, when the false membranes have already disappeared and the diphtheria is at least apparently cured. The serum should be administered in doses of from 40 to 60 cc. on the first days and should be decreased thereafter. However, only in exceptional cases is it advisable to exceed a total of from 100 to 200 cc. The intravenous injection (from 10 to 20 cc.) is to be recommended in grave cases. In the malignant forms the authors usually give simultaneously antgangrenous and antistreptococcus serum. All other treatments likewise can

be associated with the serotherapy. Depending on the circumstances, epinephrine, ouabain or strychnine sulfate may be given in the toxic forms with oliguria, physiologic solution of sodium chloride should be given by rectal drip.

Journal de Medecine de Lyon

18 577 608 (Nov. 5) 1937

*Low Leptomenigitides. Clinical and Therapeutic Studies on Fourteen Cases. Devic Ricard and M. Girard—p. 577

Leptomenigitides—Devic and his associates emphasize the increasing frequency of the low leptomenigitides among the syndromes of the cauda equina. They report clinical and therapeutic studies on fourteen cases. Anatomically the adherent process is most often encountered in the cystic type. The etiology of these syndromes is not completely clarified, it has never been possible to isolate precisely and incontrovertibly the local or general causes. From the pathogenic point of view the authors agree with Beriel that the physiologic process of sedimentation plays a part in the low localization of the infectious process. It is possible to distinguish a clinical form with scant symptomatology, pain being the only symptom. The authors emphasize the information derived from the study of the cerebrospinal fluid, presence of hyperalbuminosis and frequency of a slight cellular reaction. The progress of the iodized oil provides in the majority of cases interesting and exact diagnostic data. The mode of progression of the syndrome determines its individuality. The evolution is slow, but capriciously there are sudden exacerbations and veritable evolutive thrusts, after which there is a gradual diffusion and bilaterality of the signs. Phases of remission of several years' duration have been noted. From the diagnostic point of view, the identification of the syndrome of the cauda equina in most cases gives no serious difficulties. The true diagnostic problem is the differentiation between tumors of the cauda equina, the leptomenigitides and the diseases of the conus terminalis. To differentiate between these conditions it is necessary to pay attention to the distribution of the symptoms, to the mode of development of the syndrome and to information obtained from the lumbar puncture and from the progress of the iodized oil. The therapeutic problem is solved: it is the surgical intervention, which nevertheless has a more reserved prognosis in the leptomenigitides than in the tumors of the roots. The surgical results obtained by the authors are encouraging. Although occasionally not enough time had elapsed to judge the late results, they obtained five cures, four such considerable ameliorations as to be almost cures, generally permitting the patient to take up his work again, two arrests of the process, one of them partial, and, finally, three postoperative deaths, but one of these patients has a latent diabetes. These results although not perfect, give ample justification for the surgical treatment, the only effective therapeutic measure, internal medication and physical therapy being always ineffective. The authors admit that the spinal arachnoiditis is a much discussed problem, but in this report they study only the arachnoiditis of the cauda equina. To be sure, this low leptomenigitis may concur with forms that are localized higher up. They had occasion to observe two cases in which the two localizations coexisted.

Progres Medical, Paris

Nov. 6, 1937 (No. 45) Pp. 1534-1592

Evolution and Present Day Tendencies in Surgical Treatment of Pulmonary Tuberculosis. R. Demarez—p. 1561

Establishment of Adolescence (Puberal Growth). J. L. M. Jansen—p. 1565

*Simple and Efficacious Method of Oral Calcium Therapy. H. Fillion and P. Millischer—p. 1566

Developmental Disturbances of Hypophyseal Origin. M. Bariety—p. 1570

Simple Method of Oral Calcium Therapy—Fillion and Millischer say that the metabolism of calcium is not completely understood and that the dosage in calcium therapy is likewise still indefinite. It has been found that the degree of calcemia does not permit the estimation of the state of calcification or of decalcification of the organism. Moreover, the blood calcium exists in several forms, the most interesting of which, the active ionized form, is extremely difficult to estimate. The therapeutic procedure which the authors studied has the advantage

of being simple, efficacious and without danger. Their technique is the following: Into a flask of about 250 cc capacity, they place the finely crushed shell of an egg. They add the juice of two lemons and seal the flask hermetically. The contents of the flask are kept for about two hours at a temperature of 18 C. After thus the flask, which must still contain carbon dioxide, has to be opened. Its contents are filtered through gauze into a glass, into which a desired amount of sugar had been placed. The mixture is immediately taken by the patient, but depending on the patient's taste, some water may be added. The procedure can be employed for periods of from fifteen to twenty days, separated by short intervals. Discussing the elements that play a part in this therapy, the authors say that the egg shell consists chiefly of more or less phosphatized calcium carbonate. The lemon juice contains from 4 to 7 per cent of citric acid, also small quantities of alkaline citrates, of other organic acids and their salts, of mineral salts and of vitamins particularly of vitamin C, and of provitamin P. After making suggestions about the possible mode of action of the various substances, the authors discuss their therapeutic experiences with this method over a period of eighteen months. They employed it in various spasmodic disorders. They obtained favorable results in whooping cough, in spasmodic conditions such as tetany, in nervous irritability, and in colitis and other enteric disorders. In the last part of the paper they cite experiments on animals. In rabbits, which had been inoculated with the virus of rabies, it could be demonstrated that the administration of the preparation used by the authors retarded the development of the symptoms, whereas the administration of calcium gluconate or of the vitamin B₁ or C did not do this.

Schweizerische medizinische Wochenschrift, Basel

67 1081-1104 (Nov. 13) 1937

Surgical Alleviation of Pain in Gynecologic Disorders. H. Guggisberg—p. 1081

Pathogenesis and Therapy of Sudden Circulatory Failure. E. Liebmann—p. 1086

Clinical Aspects of Cancer of Kidney in Infants. R. Jemina—p. 1089

Results of Gonorrhea Prophylaxis in Canton of Valais and Remarks on Problem of Gonorrhea. O. Bayard—p. 1093

*Genesis of Sea and Automobile Sickness. W. Tobler—p. 1096

Genesis of Sea and Automobile Sickness—Tobler directs attention to the theory of sea, air and train sickness presented by Lenggenhager (see also abstract in *THE JOURNAL*, June 20, 1936, p. 2203), who demonstrated that the disturbances characteristic for sea sickness are not elicited by the labyrinth but rather by fluctuations in the pressure and traction exerted on the large sympathetic nervous plexus in the epigastric region. In the present report Tobler brings corroborating evidence for Lenggenhager's theory. A girl, aged 10, was subject to automobile sickness when traveling through the mountains, and the usual remedies were without avail. In accordance with Lenggenhager's suggestion to avoid pressure and traction on the viscera the child was placed prone on an upholstered board. During two hours of travel over mountainous roads the child remained free from all signs of automobile sickness. However as soon as the child left the prone position there was nausea and vomiting. When the prone position was resumed again the child again tolerated the automobile trip without difficulty. Similar observations were made on a boy aged 13.

Rinascenza Medica, Naples

14 653-688 (Oct. 15) 1937

*Influence of Menstruation on Elimination of Gonococcus. V. Puglisi—p. 659

Surgery of Ileocecal Tuberculosis. I. Radice—p. 663

Influence of Menstruation on Appearance of Gonococcus—Puglisi advises making bacteriologic examinations of the menstrual blood for the diagnosis of gonorrhea in women. In a group of twenty patients he found that gonococci are eliminated in the menstrual blood during the first and last days of menstruation. In the intermediate days the menstrual blood does not contain gonococci. The author believes that gonococci are concealed in the uterine tubular glands, which are stimulated to void during the first day of menstruation and also in the catamenial decidual cells and superficial epithelium of the uterine glands, which are eliminated on the last day of menstruation.

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American Heart Journal St. Louis
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American Journal of Cancer New York
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American Journal of Digestive Diseases and Nutrition Fort Wayne Ind.
*American Journal of Diseases of Children A. M. A. Chicago
American Journal of Hygiene Baltimore
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Anatomical Record Philadelphia
Annales de Dermatologie et de Syphiligraphie Paris
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Annali Italiani di Chirurgia Bologna
Annali di Ostetricia e Ginecologia Milan
Annals of Internal Medicine Lancaster Pa.
Annals of Medical History New York
Annals of Otolaryngology and Laryngology St. Louis
Annals of Surgery Philadelphia
Archiv für Kinderheilkunde Stuttgart
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Archivio Italiana di Chirurgia Bologna
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Balneologie Berlin
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East African Medical Journal Nairobi
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Encephale Paris
Endocrinology Los Angeles
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Frankfurter Zeitschrift für Pathologie Munich
Gazeta Médica de France Paris
Gazzetta Internazionale di Medicina e Chirurgia Naples
Ginecologia Turin
Giornale di Batteriologia e Immunologia Turin
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Giornale Medico dell'Alto Adige Bolzano
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Glasgow Medical Journal
Guy's Hospital Reports London
Gynécologie et Obstétrique Paris
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Japanese Journal of Experimental Medicine Tokyo
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Journal of Alabama State Medical Association Montgomery
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Journal of Anatomy London
Journal of the Arkansas Medical Society Fort Smith
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 Lancet London
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 Maandschrift voor Kindergeneeskunde Leyden
 Maine Medical Journal Portland
 Medical Annals of District of Columbia Washington
 Medical Bulletin of the Veterans Administration Washington D C
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 Münchener medizinische Wochenschrift Munich
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 Norsk Magasin for Lægevidenskab Oslo
 Northwest Medicine Seattle
 Novyy Khirurgicheskiy Arkhiv Dnepropetrovsk
 Ohio State Medical Journal Columbus
 Paris Medical
 Pathologica Genoa
 Pediatria Naples
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 Physiological Reviews Baltimore
 Policlinico (Pract Sect Med Sect and Surg Sect) Rome
 Polska Gazeta Lekarska Lwow
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 Psychiatric Quarterly Utica N Y
 Psychoanalytic Quarterly Albany N Y
 Public Health Reports Washington D C
 Puerto Rico Journal of Public Health & Tropical Medicine San Juan
 Quarterly Journal of Medicine Oxford
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 Schweizerische medizinische Wochenschrift Basel
 Science New York
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 Surgery St Louis
 Surgery Gynecology and Obstetrics Chicago
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 Tropical Diseases Bulletin London
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 Ugeskrift for Læger Copenhagen
 United States Naval Medical Bulletin Washington D C
 Upsala Läkareförenings Förhandlingar Uppsala
 Vestnik Khirurgii Leningrad
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 Western Journal of Surgery Obstetrics and Gynecology Portland Ore
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 Wisconsin Medical Journal Madison
 Yale Journal of Biology and Medicine New Haven Conn
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 Zeitschrift für Krebsforschung Berlin
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 Zentralblatt für Chirurgie Leipzig
 Zentralblatt für Gynäkologie Leipzig

SUBJECT INDEX

This is an index to all the reading matter in THE JOURNAL. In the Current Medical Literature Department only the articles which have been abstracted are indexed.

The letters used to explain in which department the matter indexed appears are as follows: "BI," Bureau of Investigation; "E," Editorial; "C," Correspondence; "ab," abstracts; the star (*) indicates an original article in THE JOURNAL.

This is a subject index and one should, therefore, look for the subject word, with the following exceptions: "Book Notices," "Deaths," "Medicolegal Abstracts" and "Societies" are indexed under these titles at the end of the letters "B," "D," "M," and "S." State board examinations are entered under the general heading State Board Reports, and not under the names of the individual states. Matter pertaining to the Association is indexed under "American Medical Association." The name of the author, in brackets, follows the subject entry.

For author index see page 2226

For index to Organization Section see page 101B

A

- A I R (Asthma Instant Relief) 1741—BI
A P L See Gonadotropic Principles
ABANDONMENT of Patients See Medicolegal
Abstracts at end of letter M
ABBOTT Laboratories commercial monopoly of
proprietary name (Nembital) 504
ABDOMEN See also Asclites
acute catastrophes [Abell] *1241
Adhesions See Adhesions
crises 2009
diagnostic problems of right quadrant [Pick
hardt & Rafsky] *2048
disease symptoms [Mertz] 1400—ab
Distension See Flatulence
pala operation suppressing [Dlez] 176—ab
pala with fever in boy diagnosis 2158
surgery disruption of wounds [Glenn] 623—ab
surgery laparotomies pitressin (beta hypophy-
smae) in [Secd] 84—ab
surgery vesical dysfunction after abdomino-
perineal resection [Hill & others] *1134
wounds (war) 1649
ABEL JOHN J 80th birthday 213
ABNORMALITIES See Fingers Muscles
ABORIGINES of Australia 2078
ABORTION criminal methods used etc New
Zealand 72
adonins in relation to [Litzenberg] *1871
etiology treatment 1655
habitual vitamin E and prolan progesterone
mechanism [Young] 314—ab
lactence France 885
lactence legislation Vienna 600
roentgen diagnosis of quintuple pregnancy
[Hamblen & others] *10
septic tetanus after 290
syphilis and pregnancy 451 (reply) [Cormia]
1065
therapeutic in chronic purpura haemor-
rhagica 1146
ABRAHAM JACOBI Memorial See Jacobi
ABRASIIONS See under Wounds
ABSCESS See also Brain Falloplan Tubes
Lungs etc
Amebic See Liver
periaephric renal fixation as x ray sign
[Mathe] 1848—ab
retropharyngeal in children [Dintenfass]
827—ab
subphrenic phrenic paralysis and thoracic
complications [Coope] 1586—ab
ABSORPTION See Fat Lymph Resorption
Skin
ACACIA Injection See Kidneys disease Lungs
ACADEMY See also American Leopoldine
New York
of Medicine Belgium campaign against alco-
bolsm 222
of Medicine France (award of prize) 59
(Duhamel elected fellow) 145
of Medicine Rome 1467
of Physical Medicine 1287
of Sciences France Dr Martin elected to 145
of Surgery Paris host to Royal College of
Surgery 966 1464
of Tropical Medicine 1823
ACCIDENTS See also National Safety Trauma
Automobile See Automobiles
control A M A Committee on 45
deaths from increase 596
Fourth of July injuries *1806 1818—E
Industrial See Industrial Workmen's Com-
pensation Acts
prevention study Wisconsin 1208
ACETARSONE See Trichomonas vaginalis
ACETONE See also diHydroxyacetone
in Blood See Blood Vomiting acetoneemic
in Urine See Urine
Industrial hazard [McConnell] *765
ACETONEMIA See Blood Vomiting
ACETOHEXETIDIN Intoxication (chronic)
[Spersen] 2026—ab
ACETYL BETA METHYLCHOLINE CHLORIDE
(methyl) effect on atonic colon [Nyer-
son] 239—ab
test for poisoning by atropine series [Dame
shek & Felsilver] *501
Treatment See Thrombophlebitis
ACETYLCHOLINE cardiovascular accidents
after [Sarrouy] 1082—ab
Treatment See Labor complications Tobacco
amblyopia
ACHALASIA See Ureters
ACHILLES Tendon See Tendon
ACID Acetylsalicylic Treatment See Chorea
ammoniacal detoxicates arsphenamine [Ver-
sari] 2108—ab
Barbituric See Anesthesia
carbonic acid baths [Ehrenpreis] 178—ab
Cevitamic See also Vitamin C
cevitamic and ketonemia [Negri] 90—ab
cevitamic antiscorbutic properties [PiJoan]
909—ab
cevitamic effect on uric acid metabolism
[Pescarmona] 1408—ab
Cevitamic in Blood See Blood
cevitamic in milk [Reedman] 988—ab
cevitamic in vegetables vs cooking [Levy]
1319—ab
cevitamic stimulates antibody formation 714
—E [Sulzberger] 1295—C
cevitamic synergic antigens 589—E
cevitamic synthetic in neoraspbenamine ther-
apy [Landfisch] 834—ab
cevitamic Tablets Lederle 1543
Citric Treatment See Trichomonas vaginalis
condition 610
fatty effect of injecting on dermatitis [Gins-
berg] 2018—ab
Fatty (Vitamin F) See Acid linoleic
Hippuric Test See Liver function
Hydrochloric See Stomach acidity
linoleic and linolenic (vitamin F) in relief of
common cold [Boyd] 744—ab
Mandelic Acid (Council report) 1989
(N N R) 1989
Mandelic Acid Mallinckrodt 1989
Mandelic Treatment See Urinary Tract In-
fection
nicotinic isolation in crystalline form 1203
—E (use in pellagra) [Smith & others]
*2054 [Smith] 2086—C [Funk] 2086—C
ovale danger of eating rhubarb leaves 960
—E
Phenylpyruvic See Urine
Picric See Trinitrophenol
Salicylic See also Acid acetylsalicylic (cross
reference)
salicylic in ointment Pompay also for
psoriasis 1142—BI (fatal case) [Sonn-
candro] 1160—ab [Reed] 1654—C
salicylic salicylic ester of Salsal 1906
sulfurous sterility in pulp workers from 378
tannic compound solution [Fantus & Dnyle
wicz] *200
tartaric to destroy micro organisms in water
[Vielle] 1587—ab
Uric See Uric Acid
ACID BASE EQUILIBRIUM gastric secretion
and chlorides [d Amato] 2024—ab
ACIDOPHILUS See Milk
Method See Dysentery bacillary
ACIDOSIS See also Ketosis
resulting from sulfanilamide 1454
ACNE causes 2008
treatment antitritin S [Williams & Nomland]
*564
ACRIFLAVINE urinary antiseptic [Waltber]
*1001
ACROCIANOSIS See Cyanosis
ACROPARESTHESIA angioneurosis with 1637
ACTINOMYCOSIS complications pyemia
[Spangenberg] 91—ab
treatment convalescent serum cures [Neuber]
1240—ab
ADANIS Vapour Ointment Menthol Salve
Palmon Liniment 2085—BI
ADDICTION See Alcoholism Barbiturates
Morphine Narcotics Phenobarbital
ADDISON S ANEMIA See Anemia Pernicious
ADDISON S DISEASE craving for salt in pa-
tients 1566
crisis in simulating coronary thrombosis
[Sacks] 619—ab
diagnosis by laboratory test (salt poor diet)
also treatment 607 1564
diagnosis (possible) 1218
ADDISON S DISEASE—Continued
etiology cortical necrosis from Germanin
(Bayer 205) [Wells & others] *490
lambillogenic Addisonism [Dreyfus] 1085—ab
treatment adrenal cortex extracts [Wilkin-
son] 993—ab
ADENODECTOMY results [Epstein] 462—ab
ADENOMA thyroid 2090
ADENOPATHY See Lymphatic System
ADHESIONS See also Pericarditis adhesive
Tuberculosis Pulmonary artificial pneumo-
thorax
abdominal mineral oil poured into peritoneal
cavity 731
ADHESIVE TAPE removal oil of wintergreen
[Jackson & Jackson] 294—C
ADIPOSITTY See Obesity
ADOLESCENCE acute pulmonary tuberculosis
in France 967
national exhibit of youth welfare Rome 441
puberty and prognosis in rheumatic fever
[Leonard] 985—ab
ADOPTION of children new safeguards Eng-
land 515
ADRENALIN See Epinephrine
ADRENALS See also Addison's Disease
cortex cancer estrogens in urine as test for
[Frank] *1121
cortex disease causes resorption disorders
[Verzar] 1407—ab
Cortex Extract See Addison's Disease Dys-
trophy muscular Tuberculosis treatment
cortex necrosis (selective) increased fre-
quency [Wells & others] *490
cortex relation to pincal body [von Kup]
2025—ab
pathology relation to sudden death [Slmp-
son] 87—ab
staining reaction (specific differential) [Bros-
ter] 166—ab
tumor (malignant) in children [Campbell]
*1611
tumor neuroblastoma metastasizing to auricle
[Doane & Solls Cohen] *378
tumor of epinephrine producing cells (pheo-
chromocytoma) [Wells & Boman] *1176
tumor perirenal air insufflation [Venchor]
*1338
ADRONOL Industrial hazard [McConnell] *764
ADVERTISING See also Medicolegal Abstracts
at end of letter M
cosmetics and soaps A M A Advisory Com-
mittee on use of non allergic 1723
radio Canada cleans up 1546—E
radio General Johnson commentator for Grovo
Laboratories 716—E
skin absorption of vitamins in soap 509—F
Testimonial See Testimonial
Whole Milk for the Whole Family 31
ADVISORY Board for Medical Specialties 140
AERO Medical Association 1645
Otitis Media See Otitis media
AGE See also Old Age
average of graduates *672 *673
objection to wife being older than husband?
1931
AGEusia See Taste
AGGLUTINATION REACTION See also Jaun-
dice spirochetal Undulant Fever diagnosis
cross reactions in [Glibert] 522—C
AGGLUTININS concentration in typhoid vac-
cination [Noor] 1579—ab
multiple in serum in chronic rheumatoid
arthritis [Wainwright] 1396—ab
AGNULOCYTOSIS See Angina
AINOTONE 1741—BI
AIR See also Humidity
Attacks See Aviation
compressed blood vessels impaired by pneu-
matic tools [Junglianns] 832—ab
conditioning A M A committee to study
(second report) [Yaglou] *945 (third re-
port) [Hayhurst & others] *1802
conditioning test for allergic New York 881
conditioning toxicity of di-chloro di fluoro
methane [Freon] 1507
Cysts See Lungs
Embolism See Embolism
Fresh Air Treatment See Bronchopneumonia
Hygiene Foundation of America 1733

AIR—Continued

insufflation (perirenal) to demonstrate adrenals [Vencher] *1338
 Passages See Respiratory Tract
 pollution reduction England 143
 sterilization in operating room with ultraviolet rays [Hart] 170—ab
 Traffic See Aviation

AIRPLANE See Aviation

ALBISM heredit [Sanders] 2026—ab

ALBUMINURIA alcohol produce? 891
 fever therapy produce? [Wetty] 741—ab
 tests for albumin in urine 1474

ALCOHOL See also Alcohols, Beer Wine beverages on breath 1474

coronary thrombosis relation to [Master and others] *548
 effects on automobile drivers 1376 2152
 effects on workers with carbon disulfide 1472
 fractionation of pollen antigens 280—E

in Blood See Blood

in Urine See Urine

infections See also Bladder ulcer Pain relief of Spine cancer Uterus cancer
 Injection (Intraspinal) treatment [Spangenberg] 749—ab

role in cardiovascular disease, [Weiss & Wilkins] *790
 toxic effects and oxidation 891
 trichinosis and 1723—E

ALCOHOLISM See also under Alcohol

Academie royale de médecine de Belgique campaign against 222

acule [Friedewald] 2101—ab

chronic deficiency syndromes in [Romano] 2096—ab

delirium biologic study 1054

delirium tremens etiology symptoms treatment [Hilton] 80—ab

diagnosis blood alcohol determination disjunctants for [Guischmid] 471—ab
 diagnosis blood alcohol test (Widmark) 294 976 2152

diagnosis in railway employees 888

in school children 1827

report on Illinois 1730

treatment of bangover 1300

ALCOHOL RUB 2085—BI

ALCOHOLS and their ethers Industrial hazard [McConnell] *764

ALDRICH Gentian Violet Mixture See Burns

ALKALOSIS nasal tube gastric suction resulting in [Taylor] *267

ALKALIS 2085—BI

ALLIMIN 1060—BI

ALOE Short Wave Diathermy 586 793

ALOPECIA after permanent wave 450

areata neuro endocrine apparatus in 2153

totals cause treatment 1144

treatment Croxley Nervac 1635

ALTERNATIVE for man and dogs 455

ALTITUDE High See also Aviation

high ammonium chloride in mountain sickness [Barron] 824—ab

ALTMAYER ARTHUR J See Index to Organization Section

ALUM Precipitated Toxoid See Tetanus

ragweed precipitate [Zoss] 310—ab

Spray See Pollinomyelitis

ALUMINUM Hydroxide See Colitis ulcerative

sulfate reduces toxicity of fluorine [Kemp] 1157—ab

were reaction to fruit products 1555

AMAUROSIS See Blindness idiopathic

AMEBIASIS See also Liver amebic abscess

blood sedimentation rate [Cicchitto] 1588

—ab

diagnosis complement fixation reaction [Veleney] 77—ab

incidence of chronic amebic colitis Belgium 372

treatment emetine intolerance [Lorenzo] 2108

—ab

treatment iodoform of amebic colitis [Scott] 1405—ab

AMELOBLASTOMA histology [Robinson] 236

—ab

AMENORRHEA causation treatment [Frank & others] *1863

functional [Lilzenberg] *1871

treatment ovarian extorsion for 515

[Bailey] 1563—ab

treatment X ray [Friedman] 908—ab [Kaplan] 1755—ab

uterine infantilism with 2090

AMERICAN See also Pan American list of societies at end of letter S Index to Organization Section

Academy of Dermatology (A M A committee of establishing) 44 (organized) 1208 1916

Academy of Ophthalmology and Otolaryngology 983 1051

Academy of Orthopaedic Surgeons 2077

Association for Advancement of Science (excluding Indianapolis) 964 (symposium on syphilis) 2077

Association for Health and Physical Education new organization 362—E

Association for Study and Control of Rheumatic Diseases See American Rheumatism Association

Association of Genito Urinary Surgeons

Keves medal to Dr Young 284

Board See also Advisory Board for Medical Specialties

AMERICAN—Continued

Board of Dermatology and Syphilology examination 1823

Board of Obstetrics and Gynecology examinations 284 1287 2076

Board of Orthopaedic Surgery (report) 47 (examinations) 216

Board of Otolaryngology examination 1733

Board of Pediatrics examination 284

Board of Psychiatry and Neurology (tabulated data on certification) 42 43 (examination) 1287

Board of Surgery examination postponed 595

Clinical and Climatological Association 1135

College of Chest Physicians new name for Federation of American Sanatoria 514

College of Surgeons 1135

Committee on Evaluation of Serodiagnostic Tests for Syphilis 134—E [Parran] *425

437—E [Holmer] 522—C

Congress of Physical Therapy 883

Dental Association See Index to Organization Section

Desert Tea 1925—BI

Dietetic Association 1208

Farm Bureau Federation See Index to Organization Section

Federation of Truth See Index to Organization Section

Foundation See Foundations

Hospital Association 801

Hospital (Paris) needs financial help 516

Human Serum Association organized 366

Journal of Obstetrics and Gynecology See Journals

Laryngological Association Casselberry prize 719

Medical Golfing Association tournament 141 1916

orthopedics—an Austrian opinion Albert Lorenz 361—E

Physical Education Association 362—E

Psychoanalytic Association meeting 2076

Public Health Association See also Index to Organization Section

Public Health Association—Health Education Institute 1051

Red Cross See Red Cross

Rheumatism Association abstract of proceedings 1153 1228 1307 1394 1481

Social Hygiene Association creates medal 2075

Society of Tropical Medicine 1823

AMERICAN MEDICAL ASSOCIATION See also Index to Organization Section

Advisory Committee on Advertising of Cosmetics and Soaps decision on nonallergic 1723

Annual Congress on Medical Education and Licensure program 1913

Archives of Dermatology and Syphilology recommendations on articles in 43

Atlantic City Session 35

Board of Trustees statement on Committee of Physicians proposals 1816—E

care of indigent sick and, 32—E

Chemical Laboratory (examination of American brands of sulfanilamide) 358 (Elixir of Sulfanilamide—Massengill) *1531 *1724

Committee of Physicians proposals on behalf of state medicine 1280—E 1728—E (Board of Trustees statement) 1816—E

Committee on Accident Control 45

Committee on Awards report 50

Committee on Establishing an American Academy of Dermatology 44

Committee on Foods See A M A Council on Foods

Committee to Study Air Conditioning (second report) [Yaglou] *945 (third report) [Hayhurst & others] *1802

Council on Foods (alleged decalcifying effect of cereals) 30 (Felschmann's Yeast) 276 (apple in diarrhea) 1636 (mineral oil in foods) 1814 (vitamin D milk produced by feeding cows irradiated yeast) 1814 (nutritional value of spinach) 1907

Council on Industrial Hygiene 956—E 1890—E

Council on Medical Education and Hospitals (abstract of minutes of meetings) 156 (data on medical education) *659 (to publish list of schools of basic medical sciences) *664 (hospitals approved) 72 *683 *693 2091 (medical school survey) 715—E

Council on Pharmacy and Chemistry (Condon Ertrou) 132 (Entoral) 208 (Larodon Roche) 209 (Edwin) 272 230—E (Antitubercular Serum Vulford) 504 (Pen tobarbital Sodium Abbott or Nembutal commercial monopoly of name) 504 (Causalin or Causyth) 506 (dosage of vitamin A and D preparations) 507 (Vimethene) 656 (Antipneumococcal Serum Types I and VII Lederle) 875 (thiamin chloride as term for vitamin B hydrochloride) 952 (Avertin with Amylene Hydrate) 952 (Trisodarsen formerly Triarsen) 1125 (Violesterol A R P I Process in Oil) 1126 (Hydroquinone as stabilizing agent in vitamin A preparations) 1454 (value of its work) 1727—E (Pantone Roche) 1813 (appreciation of Dr Simmons) 1906 (Salysal) 1906 (mandelic acid) 1989 (benzidine sulfate) 2064 (similar one urged for France) 2150

AMERICAN MEDICAL ASSOCIATION—Continued

Council on Physical Therapy (fever therapy apparatus) 1041 1044—E (use of term nonallergic), 1723 (audiometers) 1812

Fourth of July injuries first annual summary second series *1806 1818—E

hospitals approved by 72 *693 *693 2091

Hygiene value in writing health column for newspapers 1937

International Congress on Dermatology and Syphilology invited to New York in 1939 44

International Pediatric Congress invited to U S in 1940 39

International Society of Gastro Enterology invited to U S in 1939 49

motion picture film on syphilis reservations for 958—E

Proceedings of Atlantic City Session 35

radio broadcasts New York City schools use 1727—E

resolution on psychiatric research by various foundations etc 41

resolution on Social Security Act and applicants for blind assistance 37

resolution on 250th anniversary of Bonomo's and Gestoni's discovery of scabies 44

San Francisco Session 1729 (golf special) 1916

schools for clinical laboratory technicians approved by *709 *710

schools for physical therapy technicians approved by *708

Scientific Exhibit 50

Section on Dermatology and Syphilology, minutes 43

Section on Gastro Enterology and Proctology, minutes 48

Section on Laryngology Otolaryngology and Rhinology, minutes 38

Section on Nervous and Mental Diseases, minutes 41

Section on Obstetrics Gynecology and Abdominal Surgery, minutes 36

Section on Ophthalmology, minutes 37

Section on Orthopaedic Surgery, minutes 47

Section on Pathology and Physiology, minutes 41

Section on Pediatrics, minutes 39

Section on Pharmacology and Therapeutics, minutes 40

Section on Practice of Medicine, minutes 35

Section on Preventive and Industrial Medicine and Public Health, minutes 45

Section on Radiology, minutes 48

Section on Surgery, General and Abdominal, minutes 35

Section on Urology, minutes 46

Woman's Auxiliary news of 366

AMINO ACIDS, essential in nutrition 2070—E

metabolism and gastrointestinal ulcer, [Hart] 1764—ab

para AMINO BENZENE SULFONAMIDE See Sulfanilamide

diaminodiphenylsulfone See Streptococcus infections

AMINOPIRINE Causalin (Causyth) 506

damage by vs diet [Miller] 1314—ab

derivative Larodon Roche 209

experimental anemia, 1458—E, (correction) 1733

AMITA 1060—BI

AMMONIUM chloride effect in mountain sickness [Barron] 824—ab

Iron Ammonium Citrate See Anemia of newborn

Mandelate See Pyuria

AMNION drops [De Snoo] 397—ab

AMNIOTIC FLUID sweetening induce fetus to drink by [De Snoo] 397—ab

AMPURIN Elixir 1653—BI

AMPUTATION stump infection with B pyocyaneus 2158

AMYL ACETATE Industrial hazard, [McConnell] *765 2159

AMYL ALCOHOL Industrial hazard [McConnell] *765

AMYL NITRITE antagonistic to epinephrine 229

AMYLENE HYDRATE Avertin with 952

AMYLOIDOSIS Bennhold's Congo red test for 2160

AMYLAL effects in treating nocturnal enuresis 1065

poisoning picrotoxin treatment [Kline & others] *328 [Miller] 809—C

side actions of barbitals 508—E

ANALGESIA See Anesthesia Pain relief of

ANAPHYLAXIS and ALLERGY See also Asthma, Dermatitis, Hay Fever, Tuberculosis etc

air conditioning test for patients New York 881

alum ragweed precipitate [Zoss] 310—ab

A M A Advisory Committee on Advertising decision on nonallergic 1723

anesthesia after allergic state? Prevent shock by anesthetics 68

blood vessels changes in [Ehrstrom] 752—ab

(in thrombosis) 2152

diagnosis group skin tests 155

fatal during ether anesthesia [Quinn] *61

Food See Food

histamine injection intensifies [Corelli] 161—ab

in District of Columbia 299

- ANAPHYLAXIS AND ALLERGY**—Continued
menstrual allergy [Singer] 1077—ab
sensitivity to cimetidine [Iorenzo] 2108—ab
sensitivity to insulin 732
sensitivity to Light Sco Light
sensitivity to podophyllum? 155
sensitivity to policas but not to the seeds
8/8—E
sensitivity to sodium morrhuate [Glick] 300
[McCastor & McCastor] *1709
sensitivity to sulfanilamide [Salvin] *1038
sensitivity to viosterol in rachitic infant 452
serum sickness joint pains in 896
shock prolonged coagulation time after
[Eagle] 536—ab
teaching in medical schools Association for
Study of Allergy urges 064
tissue manifestations 2152
- ANATOMY** Basle nomenclature in 1473
exhibit of glass man from German Museum
of Hygiene 445
German Society 1824
- ANATOXIN** See Dysentery Toxoid
- ANCYLOSTOMIASIS** See Hookworm Infestation
- ANDROGENS** 1376
excretion (daily) [Gallagher] 1670—ab
[Kenyon] 1670—ab
excretion in urine of both men and women
[Diagenese] 913—ab [Koch] 1312—ab
excretion in urine of children [Dorfman]
*169—ab
lestosterone propionate inhibits menstruation
and ovulation [Zuckerman] 1857—ab
treatment of prostate hypertrophy [Chempy]
912—ab
- ANEMIA** See also Medicolegal Abstracts at
end of letter M
blood sedimentation rate in [Bannick &
others] *1257
complicating phenobarbital treatment of epi-
lepsy, [Maffard] 2023—ab
diagnosis bone marrow changes in [Weller]
1315—ab
erythroblastic (Cooley's disease) 452
experimental 1458—E (correction) 1733
experimental intestinal resection followed by
1467
experimental toxic liver treatment [Campa-
nacci] 395—ab
hemolytic (acute) from sulfanilamide [Har-
vey & Janeway] *12 [Kohn] *1005 [Jen-
nings] 2170—ab
hemolytic in favism [Hutton] *1618
hemolytic irradiate spleen with short waves
in [Groat] 93—ab
hypochromic (microcytic) or malignant neu-
tropenia 524
hypochromic syndrome [Morrison & others]
*1018
in leukemia [Beltrametti] 176—ab
iron and other extrinsic factors [Weiss &
Wilkins] *787
iron deficiency of late infancy [Fullerton]
171—ab
nutritional stable ferrous sulfate in [Mac-
lary] 1674—ab
of glomerulonephritis relation to gastric
acidity [Townsend] 2005—ab
of newborn [Péru] 317—ab (iron ammo-
nium citrate dosage) 1146
rickets relation to [McDonough] 167—ab
secondary after arsphenamine [Lieberson]
535—ab
secondary after gastric resection [Manizade]
2109—ab
secondary Buerger's theory used in treating
[Almour] 908—ab
secondary salt of reduced iron for [PiJoan]
909—ab
splenic (Banti's) tuberculous splenomegaly
and liver cirrhosis [Fittipaldi] 1084—ab
splenic hypersplenism [Schmidt] 751—ab
treatment bone marrow injection [Schretzen-
mayr] 996—ab
- ANEMIA PERNICIOUS** Clostridium welchii in
feces in [Borthwick] 85—ab
complications diabetes [McGregor] 1855—ab
craving for liver in 1566
erythrocyte chemical composition in 434—E
erythrocyte symptoms in 523
peptic ulcer absent in [Lahn] 1755—ab
psychoses and [Herman] 1075—ab
treatment congo red [Barker] 1485—ab
- ANESTHESIA** See also Medicolegal Abstracts
at end of letter M
apparatus infection with influenza from 1218
Avertia with Amylene Hydrate (Council re-
port) 952 (N R) 955
barbituric acid relation to sudden death in
labor [Montgomery] 163—ab
fibrom-ethanol in removing urethral calculi
[Jerman] 745—ab
effect on lymphatic absorption in peritonitis
[Neagle] 166—ab
epidural injections of substances besides pro-
caine hydrochloride 1743
ether eripian and lumbar action on blood
sugar [Ataan] 751—ab
ether fatal anaphylaxis during [Quill] *854
ether lipemia after [Montanus] 1672—ab
ether testing tolerance to in asthmatic 895
epinal rectal [Hogan] 2098—ab
explosion in operating room [Coste] 171—ab
explosion risks in 1052
- ANESTHESIA**—Continued
Fulton County (Ga.) Society resolution on
2074
general after allergic stato? Prevent shock
by anesthetic? 68
in obstetrics local and general in breech de-
livery [Urnes & Tlmerman] *1616
liver function during [Gaghard] 1859—ab
local mytil before procaine in dental prac-
tice 455
local dangers in injured male urethra 2010
(prevention) [Knepper] 2025—ab
Pontocaine Hydrochloride N R R 433
procaine hydrochloride block [Vishnersky]
1406—ab (untoward effect on skin) 1926
spinal headache after [Margottini] 832—ab
vinethene (Council report) 656 (N R)
658
- ANEURIN** Jansen's term for vitamin B₁ 952
- ANEURYSM** cardiac 813
dissecting of aorta differentiating from coro-
nary thrombosis [Blackford & Smith] *262
- ANGINA** Agranulocytic See also Medicolegal
Abstracts at end of letter M
agranulocytic after aminapyrine vs diet
[Miller] 1314—ab
agranulocytic after arsphenamine [Lieber-
son] 535—ab
agranulocytic after protosil flavum [Borst]
820—ab
agranulocytic after sulfanilamide 515 1128
—E [Young] 1159—ab [Jennings] 2170
—ab
agranulocytic (chronic) liver therapy [Das
Gupta] 747—ab
agranulocytic experimental [Krauel] 1677
—ab
agranulocytic malignant neutropenia or micro-
cytic hypochromic anemia 524
agranulocytic treatment by leukemic blood
[Boch] 2108—ab
agranulocytic treatment of neutropenic syn-
dromes [Beltrametti] 176—ab
agranulocytic treatment 3 procedures 886
agranulocytic treatment yellow bone marrow
extracts in granulocytopenia [Marberg &
Wiles] *1965
Vincent's mercurial treatment [Grovo] 1580
—ab
- ANGINA PECTORIS** diagnostic criteria [Rise-
man] 1485—ab
electrocardiographic aspects [Froment] 1764
—ab
etiology insulin overdose in elderly di-
abetics [Jordan] 1079—ab
treatment drug [Riseman] 743—ab
treatment producing new cardiac blood supply
[Fell & Beck] *1781
treatment purine derivatives (theobromine
theophylline caffeine etc) [Brown & Rise-
man] *256
treatment surgical O Shaughnessy on 965
treatment thyroidectomy objections [Pro-
ment] 89—ab
- ANGIOID STREAKS** See Eyes fundus
- ANGIOMA** See also Hemangioma
racemoseum intracranial [Johansen] 834—ab
- ANGIONEUROMATOSIS** [Slepyan] 536—ab
- ANGIOECROSIS** with acroparesthesia 1657
- AN IDN** 2005—BI
- ANILINE** poisoning possible 2158
- ANIMAL EXPERIMENTATION** See also Medi-
colegal Abstracts at end of letter M
antivivisection's weakest point 1275—ab
- ANIMALS** See also Chickens Dogs Goats
etc
laboratory rats source of Weil's disease
[Kerthof] 1678—ab
laboratory tuberculosis infection [Nègre] 241
—ab
- ANKLE** clonus in infant at 3 months 1835
edema (bilateral) 297
- ANKYLOSIS** See Spine
- ANKYLOSTOMIASIS** See Hookworm Infestation
- ANN PAGE** Ice Cream Dessert Powder Spierle
Chocolate Flavored Pudding 1127
- ANNALS** of Medical History See Journals
- ANOL** industrial hazard [McConnell] *764
- ANTEPARTUM** Care See Pregnancy hygiene
- ANTHELMINTICS** See Tapeworm Infestation
- ANTHRAX** case North Dakota 1050
- ANTI HEADACHE** Tablets 1741—BI
- ANTIBODIES** antigen reactions in tuberculosis
and arthritis [Brandt] 396—ab
Edwell (Council report) 272 280—E
fermentation (specific) cerivamide acid stimulates
714—E [Sulzberger] 1235—C
passive transfer of titration by neutralization
[Lippard] 903—ab
serologic against hormones complement fixa-
tion reaction [Bauer] *1442
- ANTI CAPS** 1653—BI
- ANTIGENS** antibody reaction in tuberculosis
and arthritis [Brandt] 396—ab
bowel diagnostic intradermal reaction [Paul-
son & Kravetz] *1830
characteristics of vitamin D [Sted] 1239—ab
of hormones 362—E
pollen improved alcoholic fractionation (or
purification) 280—E
synergic 589—E
virulent of Ebertella typhi [Mehdberg]
1583—ab
- ANTI HORMONES** detected by complement fixa-
tion reaction [Bauer] *1442
- ANTIMONY** Treatment See Leishmaniasis
- ANTIPASTO** botulism from [Gelger] 466—ab
- ANTIPYRINE** Benzoeate See Benzopyrene
- ANTISEPTICS** See also Bactericides, Disin-
fectants Urinary Tract infection
action in mice 1368—E
Antiseptic Capsules 1832—BI
pectin 1283—E
properties of human milk 1640—E
- ANTISEPTINE** 1653—BI
- ANTITOXIN** See Diphtheria Streptococcus
Tetanus
- ANTITULAREMIC** Serum Mulford Council re-
port 504
- ANTIVENENE** See Spider bite
- ANTOPHYSIN** See Gonadotropic Principles
- ANTUITRIN** S See Gonadotropic Principles
- ANURIA** See Urine suppression
- ANUS** See also Rectum
assure treatment [Weiss] 617—ab
Fistula See Fistula
Pruritus See Pruritus
stricture in lymphogranuloma venereum [Re-
dell] 2026—ab
suppositories lycopodium granuloma from
[Antopol & Robbins] *1192
- AORTA** Aneurysm See Aneurysm
Arteriosclerosis See Arteriosclerosis
atherome ulcerated infected [Sacon] 470—ab
commisural lesion in rheumatic fever [Gross]
307—ab
diameter measuring 147
Syphilis See Aortitis syphilitic
- AORTITIS** syphilitic [Paulin] *1123
syphilitic staphylococcal endocarditis super-
imposed on [McMillen & Wilbur] *1194
- APCO** No 36 Antiseptic Suppositories 2085—BI
- APHASIA** visual word blindness 298
- APICULOSIS** See Tuberculosis Pulmonary
- APOMORPHIN** See Medicolegal Abstracts at
end of letter M
- APPARATUS** See also Anesthesia Diathermy
Instruments Respirator
Collens Wilensky Intermittent Venous Occlu-
sion 131 [Collens & Wilensky] *2125
Crosley Nervac 1635
for air conditioning [Hayhurst & others]
*1802
for carrying oxygen during high flights 516
for testing sensitivity of eye to colored light
442
portable for prolonged artificial respiration
[Bradhy] 2006—C
stairway also bicycle for heart function tests
[Nylin] *1333
suction device (simple external) [Tenopyr]
1158—ab
to produce 10 per cent carbon dioxide [Gould
& Huddleson] *1973
- APPELLA** Apple Powder 1637
- APPENDECTOMY** amaurosis after [Gjessing]
1487—ab
technic especially stump treatment [Ochs-
ner] 1854—ab
- APPENDICITIS** acute in children [Allen]
*121
acute etiology [Wangenstein] 2017—ab
chronic atypical [Del Valle] 2024—ab
diagnosis contraction of adductors as new
sign [Richey] 2023—ab
diagnostic problems [Pickhardt & Rafsky]
*2048
etiology [Connell] 1311—ab
etiology otyrils [Battaglia] 832—ab
Tuberculosis See Appendix tuberculosis
- APPENDIX** diverticula formation [Wunder]
1861—ab
pathology 71
tuberculosis (primary) [Thieme] 163—ab
- APPETITE** rôle in controlling weight [Mac-
lagan] 1857—ab
- APPLE** Diet See Diarrhea
powder Appell 1637
saucé (Wegner) 587 (Stokelys) 1201
- ARACHNOIDITIS** chronic after lymphocytic
meningitis [Barker & Ford] *785
optochiasmatic 2151
- ARAUJO** LINCOLN 147
- ARCHIVES** Internationales des brucelloses See
Journals
- of Dermatology and Syphilology** See Ameri-
can Medical Association
- ARCTIC** research laboratory in 1916
- ARGENTINA** League Against Tuberculosis cen-
ter 1139
- ARGYRIA** following neosilol nose drops 077
- ARMS** See also Elbow Hand Shoulder Wrist
local overgrowth [Chandler] *1411
raising in tuberculosis 2009
- ARNSTRON'S** Sore Throat and Quinsy Drops
1929—BI
- ARMY** See also Military Navy Soldiers
Veterans War
British physical reconstruction of substandard
recruits in 591—E 2150
German physical education and fitness of re-
cruits 1737
officers puttees and Buerger's disease 228
U S (examination for medical corps) 285
(annual medicomilitary training course) 597
- ARRHEOBLOSTOVA** [Föderl] 1493—ab
- ARRHYTHMIA** See also Pulse alternating
cardiac and life insurance 892

- ARSENIC** See also *Medicolegal Abstracts* at end of letter M
action on nails Mees's diagonal diagnostic stripes [Simons] 94—ab
poisoning during treatment of leukemia [Kandel] 2168—ab
poisoning hazards of contaminated fruits and vegetables 135—E
poisoning prevention Louisiana 364
Potassium Arsenite See *Leukemia myelogenous*
treatment icterus after [Gaffar] 90—ab
treatment toxic effects [Siemens] 1589—ab
ARSENOXIDE Treatment See *Syphilis* early
ARSONYAL Professor honored 1826
ARSPHENAMINE See also *Neoparsphenamine*
bone marrow depression after [Liebersohn] 535—ab
dermatitis [Sprafke] 1239—ab
dermatitis (exfoliative) [Epstein] *117
dermatitis treatment 67
jaundice after [Soffer] 164—ab
jaundice in neurosyphilis 152
leukocytes modified by [de Lillo] 90—ab
sensitivity in syphilis 228
toxicity aminoacetic acid counteracts [Ver sar] 2108—ab
treatment central nervous system changes after [Russell] 1673—ab
ART medical murals at Washington fair 710
ARTERIES See also *Aneurysm Arteriosclerosis*
Blood Vessels Veins etc
Coronary See also *Arteriosclerosis coronary*
Thrombosis coronary
coronary disease in youth vs persons past 80 [Glendy & others] *1775
coronary heart attacks and indigestion 1297
coronary heart disease prognosis [Klag] 83—ab
coronary occlusion [Wolferth] *1769
coronary postmortem examination [Nieuwenhuizen] 1862—ab
digital occlusion 1566
Embolism See *Embolism*
peripheral diseases diagnostic methods [von Razgha] 1861—ab
popliteal pulse method of obtaining 451
pulmonary functional systolic murmur in [Diaz Nielsen] 1676—ab
Roentgen Study See also *Brain blood vessels*
roentgen study accidents with contrast medium [Garraud] 1083—ab
roentgen study diiodrast etc in [Bird] *1626
venous connections (congenital or spontaneous) [Rosenak] 631—ab
ARTERIOGRAPHY See *Arteries* roentgen study Brain blood vessels
ARTERIOSCLEROSIS See also *Medicolegal Abstracts* at end of letter M
aorta atheroma ulcerated and infected [Sancón] 470—ab
cerebral hypotension with headaches 1065
cerebral theelin therapy in climacteric [Ault & others] *1788
coronary producing new cardiac blood supply for [Fell & Beck] *1781
etiology cholesterol [Leary] 1382—C
iliac and femoral 2159
intermittent claudication in [Veal] 1845—ab
mortality rates 153
neurologic symptoms due to 298 (reply) [Katz] 733
nodding spasm or head nod 1747
obliterans (treatment) 730 [Collens & Wilensky] *2127 (in feet) 2007
senile and brain degeneration 1145
tobacco habit and effect of lobeline sulfate [Wright & Littauer] *649
treatment buffered sodium citrate [Jablons] 522—C (reply) [Bernheim & London] 523—C
treatment short wave 1836
ARTHRITIS See also *Osteo arthritis Rheumatism*
American Rheumatism Association 1153 1228 1307 1394 1481
Ankylosing See *Spine*
antigen antibody reactions [Brandt] 396—ab
atrophic 152
blood sedimentation rate in [Bannick & others] *1257
chronic care of feet in [Kuhns] *1108
chronic diagnosis cure [Cecil] 1153—ab 1937—ab
chronic environment factors in [Cobb] 1153—ab
chronic filament nonfilament count in [Stein-Brocker & Hartung] 606—C
chronic gold salt therapy [Snyder] 1307—ab [Hartfall] 2105—ab
chronic in children prognosis [Colver] 1583—ab
chronic infectious effect of jaundice on [Hench] 1481—ab [Thompson] 1482—ab
chronic multiple agglutinins in serum [Wainwright] 1396—ab
chronic progression of deformities [Stump] 1396—ab
chronic sariorius bursitis simulates [Moschcowitz] *1362
chronic subcutaneous nodule of [Collins] 1405—ab
chronic virus etiology [Eagles] 1585—ab
ARTHRITIS—Continued
chronic vitamin C in [Rinehart] 1394—ab
chronic vitamin D C B₁ treatment [Mallwa] 1590—ab
climate in 1143
deformans (beginning) treatment 528
gonococcal primary 1920
gonococcal septicemia with fever therapy [Hazel & Snow] *1275
gonorrhea (latent) cause of acute polyarthritis ular form [Spink & Keefer] *325
gonorrheal in new-born after ophthalmia neonatorum [Hoffman & Schneider] *1447 [Hurlitz] 2006—C
gonorrheal pathogenesis recovery treatment [Keefer & Spink] *1448
gonorrheal (proliferative and degenerative) [Stecher] 1230—ab
gonorrheal roentgenography [Nguyen Diah Hoang] 628—ab
Hypertrophic See *Osteo arthritis*
menopausal 1209
polyarthritis (acute) antiscarlatina serum for [Enson] 317—ab
polyarthritis subsides in pregnancy 2161
postural defects related to [Hartung] 2099—ab
Rheumatoid See *Arthritis chronic*
skin tests with bacteria products [Traut] 988—ab
tissue (soft) lesions in [Kling] 904—ab
traumatic in workers using hammers or pneumatic tools 722
Treatment See also *Arthritis chronic Arthritis gonorrheal Arthritis polyarthritis*
treatment bilirubin and bile acids intravenously 1298
treatment Causalin (Causyrb) 506
treatment cobra venom 1143
treatment fever [Simmons] 904—ab [Stecher] 1755—ab
treatment short wave [Maragliano] 833—ab
treatment surgical reconstruction of cripple [Wilson] 1228—ab
treatment vaccine (discussion) 1229—ab [Jordan] *1444
treatment vitamin D Condol and Ertrion 132
Tuberculous See *Hip Joint*
ASBESTOSIS See *Pneumoconiosis*
ASCITES See also *Pick's Syndrome*
in chinchophen jaundice [Boros] *113
in hepatic cirrhosis or portal obstruction [Fuller] 1316—ab
menstrual function relation to [Hartwell & Johnson] *1800
ovarian fibroma with [Rhoads & Terrell] *1684
pleural [Goodman] *1980
treatment in person of 60 1566
ASPIRIN 1473
ASPIRIN See also *Carbon Monoxide poisoning*
neonatorum initiating respiration in [Wilson] 2103—ab
neonatorum use of E & J Resuscitator [Martinez] *489 (also Drinker respirator and pulmonary) [Henderson] 1561—C [Hurlbut] 2157—C
neonatorum use of Emerson Infant Respirator 131
ASPIRATION See *Chyle aspirated*
Biopsy See *Biopsy*
ASPIRIN See *Acid acetylsalicylic (cross reference)*
ASSAULT and Battery See also *Medicolegal Abstracts* at end of letter M
ASSOCIATED Medical Services Inc See *Index to Organization Section*
ASSOCIATION See also *American International list of societies at end of letter S*
for Study of Allergy committee urges instruction in allergy 964
of American Medical Colleges 1287
of Medical Students meeting 2076
of Military Surgeons of United States 882
ASTHENIA See also *Myasthenia*
neurocirculatory 730
ASTHMA cardiac treatment [Smith] *646
diagnosis treatment 608
during and after jaundice [Boros] *113
ether tolerance tests in patient 895
etiology deficient atmospheric moisture [Parlato] 1579—ab
etiology house dust and abdominal distention 892
etiology sawdust 525
etiology Spanish moss [Metzger] 1076—ab
etiology sulfur dioxide in refrigerator repairman [Dowling] 2020—ab
heart in [Colton] 310—ab
nostrum A I R (Asthma Instant Relief) 1741—B1
premenstrual 893
psychogenic factor in [Strauss] 1317—ab
skin sensitivity in [Pearson] 317—ab
treatment Duke Fingard method 794—E
treatment ephedrine sulfate and sodium or potassium iodide [Boch] 1078—ab
treatment theophylline with ethylenediamine [Green & others] *1712
ASTIGMATISM See *Eyes refraction*
ASTROCYTOMAS [Alpers] 307—ab
ASTYPTODYNE Ointment 2157—B1
ATABRINE Treatment See *Malaria*
ATAXIA cerebellar form of poliomyelitis [Glanzmann] 1859—ab
Friedreich's 894
Locomotor See *Tabes dorsalis*
ATELECTASIS See *Lungs collapse*
ATHEROMA See *Arteriosclerosis*
ATHLETICS See also *Exercise Physical Education*
heart and [Cooper] 316—ab
International Congress of Medicine as Applied to (first) 1187
ATHOLIN 1925—B1
ATLANTIC CITY Session See *American Medical Association Index to Organization Section*
ATLAS Sales Company fraudulent salesman 216 366
ATROPHY See also *Arthritis atrophic Cerebellum Fat Nails Nephritis atrophic Nerves optic Skull Stomach Testes*
muscular progressive or lead poisoning 2089
muscular progressive report of studies 113
ATROPINE See also *Novatropine*
Sulfate See *Peptic Ulcer treatment*
toxicity mechoyl test [Dameshek & Feln silver] *561
toxicity mental disorders when given after insula [Quigley] *1363 [Quinlan] 2006—C
toxicity psychosis after use in eye 1931
toxicity when given orally 813
Treatment See *Encephalitis Epidemic sequels Paralysis agitans*
ATTORNEYS England's coroners to be 515
AUDIOMETERS requirements for Council acceptance 1812
AUDITORY Canal See *Ear*
Nerve See *Nerves*
AUREA Hearing Aids 585
AUSTRALASIAN Medical Congress 1555
AUSTRIAN Society of Roentgenology 968
AUTOHEMOTHERAPY See *Hemotherapy*
AUTOMOBILES See also *Transportation*
accidents alcohol test in Germany 2152
accidents heart lesions from blunt force [Munck] 322—ab
accidents kill 196 1134
accidents (road) National Safety First Association report England 442
accidents sudden loss of consciousness as cause 1057
accidents tetanus bacilli in street dust [Gilles] *484
Drivers See also *Index to Organization Section*
drivers effects of alcohol on 1376 2152
drivers license eligible for after syphilis treatment? 1473
driving at night vs vitamin A deficiency [Jehgers] *756 (correction) 965
Injuries [Strath] *940
sickness value of prone position [Tobler] 2172—ab
sirens antinnoise campaign Paris 598
traffic code effect New Zealand 222
traffic safety course on Chicago 363
traffic regulations New Hampshire 54
United Automobile Workers establish Medical Research Institute 717
velure covered sponges rubber pad for instrument panel [Strath] *944
AUTOPSIES See *Medicolegal Abstracts* at end of letter M
AVERTIN with Amylene Hydrate (Council report) 952 (N. N. R.) 955
AVIATION Aero Medical Association of U S 1645
aeronautic medicine congress France 1375
air attacks (London a water supply) 516
(national school for protection Belgium) 596 888 (precautions against England) 884 1825 (gas masks distributed England) 1052 (gas proof shelters in hospitals France) 1051 (protection of food) 1291 1825 (precautions and English government) 2078
air traffic and contagious diseases regulations 968
air traffic and spread of yellow fever 719 1204—E
nervous system (sympathetic) and Association of Commissioned Teachers of Aeronautic Hygiene discuss 518
oxygen carrying apparatus for high flights 516
pilots effect of flight on middle ear [Armstrong & Helm] *417
United Air Lines Col Tuttle medical director 7824
AWARDS See *Prizes*
AZO Dye Therapy See *Dyes*
AZOSPERMIA See *Spermatozoa*
AZOTEMIA See *Blood urea*

B L & K R 2085—B1
B V Monthly Relief Compound Menstrua etc.—1832—B1
BACILLARIA See *Bacteremia*
BACILLUS See *Bacteria*
BACK See also *Sacroiliac Joint Spine*
Pain in See *Backache*
strains low 299

- BACACACHE** See also Sciaton
cystocle and 2090
low from episcaprollic lipoma [Ries] 1756
—ab
tow from fascia lata conditions fasciotomy
[Ober] *554
tow from intervertebral disk lesions [Bnrr &
others] *1265
low from ligamenta flava hypertrophy [Spur
lag & others] *928
tow study of [Badley] 78—ab
- BACTEREMIA** See also Septicemia Tubercle
Bacillus
hypersensitivity and focal infection [Wels
berger] 313—ab
septicemia and 487—ab
streptococci [MacNeal & Cavallo] *2139
- BACTERIA** See also Diphtheria Pneumo
coccus Staphylococcus Streptococcus
Tubercle Bacillus Typhoid etc
Acidophilus See Dysentery bacillary MII
brucella culture apparatus to produce carbon
dioxide [Gould & Huddleson] *1973
colony and ketogenic diet 228
colony content and mineral waters 58
colony infections of urinary tract autfanli
amida for [Kennys] 1082—ab
colony prostatitis and vaginitis 975
colony protect peritonum against infection
Steinberg method 1457—L
colony pyocystitis prontosil flavum for
agrauocytosis after [Borst] 829—ab
Dural dysentery acidophilus diagnostic meth
od [Silverman] *1024
Enteritidis See Salmonella
Friedlander Infections [Baehr] 535—ab
in canned foods [Jones] 315—ab
in cutaneous lesions [Fasting] 1581—ab
injected in blood renal elimination [Ligas]
2107—ab
proteus conjunctivitis [Zuccoli] 1320—ab
proteus infection of bladder 2161
proteus pylonephritis [Hirsch & Sapatro]
*937
pyocyanus extract action [Adler] 916—ab
pyocyanus infection of amputation stump
2158
short or ultrashort irradiation modify
[Werthelm] 1496—ab
skin tests with [Traut] 088—ab
Sulphister See Salmonella subpustifer
sulfatamide effect on [Bitts & Long] *1524
warfare usage 1646
wetcibi formal toxoids in gas gangrene pro
phylaxis [Penfold] 011—ab
wetchil type in feces especially in pernicious
anemia [Northwick] 85—ab
- BACTERICIDES** See also Antiseptics Blood
bactericidal power
antibacterial effect of serums and exudates
[Hughes] 1674—ab
- BACTERIOLOGISTS** U S Civil Service exami
nation 883
- BACTOPEPTONE** See Peptone
- BAKER NORMAN** application for radio broad
cast studio rejected 375—BI
fined—one day in jail Iowa 798
- BAKER S Cough Syrup** 1653—BI
- BALDNESS** See Alopecia
- BANANA OIL** See Amyl Acetate
- BANDAGES** See Dressings
- BANITS Disease** See Anemia splenic
- BARBITURATES** See also Amytal Pento
barbital Phenobarbital and also Medico
legal Abstracts at end of letter M
addiction [Robinson] 1760—ab
picrotoxin antagonistic to [Krantz] 2019
—ab
side actions 508—E
- BARR SW 15 Short Wave Radiotherapy and
Electro Surgical Unit** 951
- BARUCH (Simon) Research Institute** Baudisch
director 799
- BASIC Medical Sciences** Sea Science
- BASILE nomenclature** in anatomy 1473
- BASOPHILS** of normal blood length of life of
[Osgood] *933
- BATHS** carbonic acid [Ehrenpreis] 178—ab
colloid with oatmeal and sodium bicarbonate
directions for giving 87
contrast for feet use of hose instead of
buckets [Kurtz] 1654—C
- BAY SHORE Brand Sliced Beef Liver** 1201
- BAYER 205** See Germanin
- B CG Vaccine** See Tuberculosis Immunization
- BEANS** See Soy Beans
- Fava** See Favism
- BECK S Little Wonder Headache Powders**
2156—BI
- BECK KASCHIN Disease** See Osteo Arthritis
deformans
- BECL LEE De Luxe Duo Therm** 432
- BECLERE HEARI death** 1648
- BED** See Pillows
- BEE Venom Desensitization** See Edema anglo
neurotic Urticaria
Venom Investigation 1138
- BEEF Sliced Bay Shore Brand** 1201
- BEER** barrels toxicity of varnish for 454
cans toxicity of materials used in lining 891
beart [Weiss & Wilkins] *790
- BEE S Laxative Cough Syrup** 2085—BI
- BEHAVIOR** after operation for skull fracture
164—J
Neurotic See Neurosis
- BEJEL** See Syphilis endemic
- BELCHING** 1838
- BELLADONNA** See Encephalitis Epidemic
aquels
- BEN Arld's Desert Remedy** 1925—BI
- BENNHOLDS Test** See Amyloidosis
- BENTONITE dust** 1658
- BENZADON Skin** See Breast tumor
- diBENZANTHRACENE** tumors in mice [Ander
vont] 84—ab
- BENZEDRINE** chemical formula *2065
sulfate Council report *2064
sulfate effect on hematopoietic system
[Schubo] 311—ab
sulfate in chronic encephalitis [Finkelman &
Shapiro] *344
sulfate in chronic exhaustion depression and
psychoneurosis [Wilbur & others] *549
sulfate in narcolepsy [Ulrich] 2101—ab
- BENZENE (benzol) Industrial hazard** [McCon
nell] *764
chronic myelogenous leukemia in machinery
oilers 1370
poisoning (chronic) severe bone marrow da
pression after [Lieberson] 835—ab
poisoning latent in factories 722
- BENZINE** industrial hazard [McConnell] *764
- BENZOPYRENE** tumoral action 62
- BENZYL Alcohol Ampul Vials Solution Sodium
Morhuate with** 1365
- BEQUESTS** See Foundations Hospitals
- BERGAMOT Oil** of See Oil of Bergamot
- BERIBERI** decrease Japan 289
heart symptoms [Weiss & Wilkins] *788
[Weiss] 936—ab
- BERNARD Foundation** See Foundations
- BERNHARD ROBERT** on use of Causaltn
(Causytb) in arthritis 506
- BESREDA S Vaccination** Sea Cancer
- BEST J E M Best Patent Flour** 1455
- BEVERAGES** Alcoholic See Alcohol Beer
Wine
Choc Lade Chocolate Flavored Drink 1455
Choc Lade Dairy Drink Powder 277
- BIER Dr German Nobel prize** 2002
- BILE** black opacification of gallbladder by
[Flessinger] 830—ab
hypercholita in feces in infantile broncho
pneumonia [Galeotti Flori] 318—ab
pigments elimination increased in myopa
thias 1467
salts treatment of arthritis 1298
- BILE DUCTS** duodenal contents inflow into
[Baastrop] 322—ab
inflammation (primary suppurative) treat
ment by liver rehabilitation [Bassler] *864
obstruction decompression after [Ravdin]
623—ab
pathologic physiology relation to colic [Wal
ters & others] *1591
perforation peritonitis 1053
- BILIARY TRACT** See also Bile Ducts Gall
bladder Liver
obstruction [Chasornikhor] 632—ab
surgery postoperative care [Payne] *1436
- BILIRUBIN** in Blood See Blood
in Urine See Urine
Test See Liver function
treatment of arthritis 1298
- BILLINGS (Frank) lecture** [Capps] *852
- BINGHAM WILLIAM** gift for medical center
for rural physicians Massachusetts 717
- BIO Prepared Salt** 1060—BI
- BIOCHEMIST** wanted for syphilis research
1997
- BIOPHYSICS symposium** Philadelphia 1995
- BIOPS** aspiration and distant metastasis
[McLean] 1579—ab
aspiration staining tissues from [Aghaloro]
470—ab
- BIRTH** Sea Labor
Number of Births See Fertility
Rate Sea Vital Statistics
- BIRTH CONTROL** activities council to coordi
nate U S 440
contraceptives Mrs Ceellia Scott fined for
selling 1994
trauma and infection from gold stem pessary
[Cholsser & Notes] *1628
urethritis from Gold Tex condom 2009
- BI SARCOL** 2085—BI
- BISWITZ** in Urine See Urine
Iodobismol See Syphilis treatment
leukocyt modification from [de Lillo] 90—ab
sensitivity to in syphilitic patient 379
Subsalicylate See also Verruca treatment
Subsalicylate in Oil 1543 1989
Treatment See Syphilis Tabes Dorsalis
Tonsils Infected Verruca
- BITES** See also Spider
human hand infections from [Valer] 1399
—ab
- BIJERRUMS Scoloma** See Scoloma
- BLACKSTONES Tru Laxative Bromides Quin
line Cold Tablets** 2005—BI
- BLADDER** cystocelo and backache 2090
cystometry in neurosyphilis [Brodie] 1938
—ab
dysfunction after abdominoperineal resection
[Hill & others] *1181
exstrophy ureterointestinal anastomosis [von
Mikulicz Radecki] 321—ab [Foley] 991
—ab
Fistula See Fistula
- BLADDER—Continued**
functional imbalance at ureterovesical junc
tion [Hepler] *1602
infection (B proteus) 2161
inflammation cystitis with impotence 527
(reply) [Borrell] 396
treatment in spinal injuries of war 1298
trichomonas infestation [Nitschke] 170—ab
tumors (malignant) in children [Campbell]
*1609
tumors treatment [Donohue] 1489—ab
tumors treatment x ray [Fahler] 312—ab
ulcer transvesical alcoholic injection [Fol
som] 621—ab
- BLAIR S Best Flour** 1127 1201
- BLANCHARDS S (Prof Joseph) Eczema Lotion**
1653—BI
- BLANTON S Rheumatic Salve** 1741—BI
- BLASTOMA** metabolic xanthoma tn [Biebl]
1765—ab
- BLAUSTEIN Foundation** See Foundations
- BLEULER EUGEN** 80 years old 805
- BLIND A M A resolution** on Social Security
Act and applicants for assistance 37
- BLINDNESS** Color See Color Blindness
decrease in children England 1998
delayed action from gas warfare 1647
Idiopathic amaurosis after appendectomy
[Gjessing] 1487—ab
Idiopathic amaurosis after quinidine 1829
Idiopathic tobacco amblyopia acetylcholino
and sodium nitrite for [Duggan] *1354
- Night Sea Hemerotalopia**
of hypophyseal origin [Pesme] 1942—ab
prevention syphilis in relation to [Berens &
Goldberg] *777
prevention Union of Counties Associations for
the Blind report 1209
prevention vision conservation instituta tn
Cuba 1917
Trachoma Clinics of Southern Illinois [Gradie
& De Francols] *253
Word See Apbasia visual
- BLOOD** See also Hemorrhage Hemotherapy
Serum
acetone simple estimation [Abels] 989—ab
Acetonemia See Vomiting acetonemic
alcohol effect of coffee [Koopmann] 243—ab
alcohol estimation disinfecting substances
for [Gutschmidt] 471—ab
alcohol Wildmark test 294 976
analysts depressed petroleum block in
[Abrabamson] 1402—ab
Bacteria tn See also Bacteremia
bacteria injected in renal elimination [Ligas]
2107—ab
bactericidal power [Fajerman] 244—ab
[Baccarini] 1785—ab
Bank See Blood conservation
bilirubin induced hyperbilirubinemia in ar
thritis [Thompson] 1482—ab
bromide in psychotic epilepsy [Minsk] 2170
—ab
Cadavers See Blood Transfusion
calcium treatment in order to raise or lower
[Aub] *1277
carbon monoxida normally found in 722
carotene (serum) [Stepp] 1860—ab
carotene (serum) in diabetic photo electric
colorimeter test [Stueck & others] *343
Cells Sea also Erythrocytes Leukocytes
cells culture [Osgood] *933
cells variations in catatonla [Milella] 1237
—ab
cevitamic acid effect of infection on [Faulk
ner] 535—ab
cevitamic acid low tn rheumatic infection
[Rinehart] 1394—ab
changes in pregnancy 886
changes in tuberculous after vitamin C and
orange juice [Radford] 390—ab
chemistry and sedimentation in senility [Bro
din] 89—ab
chemistry apparatus for determination of
1146
chemistry in thyroid crisis, [Maddock &
others] *2130
chemistry of erythrocytes in pernicious ane
mia 434—E
cholesterol after thyroid resection [Atnan]
1162—ab
cholesterolemia Society of Hydrology discuss
219
Circulation See also Capillaries
circulation effects of smoking on 896
circulation fatigue with low metabolic rate
811
circulation hematogenous pulmonary tuber
culosis [Zavod] *1693
circulation in venous obliterations and resec
tions [Fontaine] 175—ab
circulation pump constructed like human
heart demonstrates 445
circulation to heart produced by grafting
vascularized tissues [Fell & Beck] *1781
circulatory collapse physiologic bases 146
circulatory complications of diabetes [Rad
nal] 751—ab
circulatory disorders from stimulating cellae
plexus [Bursteln] 1313—ab
circulatory disorders in nutritional deficiency
[Weiss & Wilkins] *786
circulatory disorders syncope after [Herr
mann] 907—ab

BLOOD—Continued

circulatory system role in growing old 1829
Clotting See Blood coagulation
Coagulant Extract See Hemophilia
coagulation and calcium 1818—E
coagulation colchicine effect on [Loicq] 1493—ab
coagulation determining onset and duration of [Festen] 1408—ab
coagulation disorder (hemophilia like) in purpura [Tschopp] 751—ab
coagulation protobrombin vitamin K [Quick] 66—C
coagulation time after histidine [Bloch & others] *204
coagulation time (prolonged) after anaphylactic shock [Eagle] 536—ab
coagulation vitamin C effect on [Terazawa] 1941—ab
Conservation See also Blood sedimentation
conservation blood bank at Cook County [Fantus] *128
conservation with neutral sulfate of oxyquinoline for Wassermann test 58
creatinine Jaffe's color reaction for value in uremia [Popper] 915—ab
Culture See Blood cells
discoloration in pathologic specimens 298
Disease See also Anemia Angina agranulocytic Leukemia Polycythemia etc
Donors See Blood Transfusion
Dyscrasias See also Anemia Angina agranulocytic Leukemia Purpura etc
dyscrasias diagnosis [Jeter] 2021—ab
epinephrine Whitehorn test in hyperthyroidism [Maddock & others] *2133
expelling Esmarch's bandage for [Holzbach] 1085—ab
fats in liver diseases [Campana] 1084—ab
fats lipemia curve after ether anesthetics [Montanus] 1672—ab
fats lipemia plasma lipoids in [Herbert] 1941—ab
fats postoperative [Boyd] 1317—ab
fats (serum) in eczema 510—E
fats variations of normal [Man] 989—ah
Flow See Blood circulation
formation benzedrine sulfate effect on hematopoietic system [Schube] 311—ab
formation hematopoietic hormone in hypophysis [Flaks] 1407—ab
formation normal liver hematopoiesis [Bertelsen] 244—ab
formation punctures of hematopoietic centers in splenomegaly [Well] 912—ab
group tests for nonpaternity 1929
groups typing 895
histamine like constituent [Code] 1405—ab
hormones alleged interferometric examinations 1659
in cancer (specific properties) 1467 [Aron] 1675—ab (ninydrin reaction) [Welss] 1944—ab
in Urine See Hematuria
Indicanemia clinical value [Pinell] 831—ab
Injection See Hemotherapy
Journal of Pathologic Haematology name changed to *Japanese Haematology* 289
Ketoneuria See also Vomiting ketoneuria
ketoneuria after epinephrine injections [Andres] 749—ab
ketoneuria and antiketogenic action of dextrose [Marlees] 915—ab
ketoneuria and vitamin C [Negri] 90—ab
nitrogen apparatus for determination 1146
nitrogen (rest) increase in diabetic coma [Gopfert] 1943—ab
of Pregnant Women See Pregnancy
oxygen deficit in pulmonary tuberculosis [Vorwerk] 1161—ab
peripheral modifications in pulmonary abscess [Bertola] 1238—ab
phenols in determining 969
phosphatase and phosphorus (plasma) in fractures [Feden] 171—ab
phosphatase (serum) in bone diseases [Mitchell] 537—ab [Woodard] 2167—ab
phosphatase (serum) in jaundice [Cantarow] 464—ab
picture after pneumothorax [Mourler] 1768—ab
picture (leukemoid) in bone marrow fibrosis [Metzler] 307—ab
platelets after operations [Mazzini] 629—ab
platelets Donaggio reaction (postoperative) [Perazzo] 469—ab
platelets essential thrombopenia vitamin C and iron for [Hildebrandt] 1321—ab
platelets number seasonal variations [Tocantins] 905—ab
polyneuropathy (postoperative) [Ferracani] 242—ab
polypeptides in dementia paralytica [Claude] 1237—ab
Preservation See Blood conservation
proteins after thoracoplasty in pulmonary tuberculosis [Lenci] 995—ab
proteins albumin globulin quotient and Takata test [Kaunitz] 1767—ab
proteins homogeneity of crystalline serum albumin 1368—E

BLOOD—Continued

proteins hyperproteinemia and plasma cell myeloma [Schumacher] 1757—ab
proteins hyperproteinemia myelomatosis [Transbol] 1322—ab
proteins hypoproteinemia in general edema [Binger & Keith] *1
proteins (serum) changes in lymphogranuloma [Jersild] 1862—ab
proteins (serum) in leukopenia [Bing] 1086—ab
reticulo endothelial system blocking effect on [Cosentino] 1943—ab
sedimentation after pneumothorax [Mourler] 1768—ah
sedimentation (erythrocytes) new reading [Carez] 1493—ab
sedimentation rate (erythrocyte) in amebiasis [Cicehittos] 1558—ab
sedimentation rate (erythrocyte) simple test clinical value [Bannick & others] *1237
sedimentation rate in digestive tract tumor [Stengel] 93—ah
sedimentation rate in pulmonary tuberculosis 1835
sedimentation rate of stored citrated blood in malignant tumors [Koster] 1086—ab
sedimentation rate postoperative [Perazzo] 469—ab
sedimentation rate vs Schilling count in rheumatic infection 878—E
sedimentation reaction [Worsaae] 1496—ab
sedimentation reaction in cancer prognostic value [Jacoby] 1162—ab
sedimentation reaction in stored blood [Christensen] 472—ab
stream cancer spread by [Patey] 314—ab
Sugar See also Diabetes Mellitus
sugar after epinephrine injections [Andres] 749—ab
sugar after thyroid resection [Atnan] 1162—ab
sugar and brain injury 228
sugar anesthetics effect on [Atnan] 751—ab
sugar hypoglycemia [Marlin] 2167—ah
sugar hypoglycemia dangers from giving atropine or novatropine [Quigley] *1363
[Quinlan] 2006—C
sugar hypoglycemia differentiating from hyperinsulinism 378
Sugar Hypoglycemic Shock (Therapeutic) See Dementia Praecox Trypanosomiasis
sugar in cancer 1467
sugar in intermenstrual and menstrual period [Auerbach] 1493—ab
sugar Lupinus albus seeds effect on [Ferriani] 1238—ab
Testing See also Blood group
testing (medicolegal) for human blood precipitin serum for 896
Typing See Blood groups
urea azotemia after operation [Ferracani] 242—ab
uric acid criticism of determination [Pinosch] 994—ab
viscosity in hypertensive disease 894
viscosity (serum) and Takata test [Kaunitz] 1767—ab
vitamin A in [Stepp] 1860—ab
vitamin A (serum) in pneumonia [Lindqvist] 1861—ab
Vitamin C in See Blood cerulanic acid
Volume Index See Erythrocytes
water content lung regulates [Fröhlich] 93—ab
water postoperative variations 1467
BLOOD PRESSURE acetylcholine effect on [Sarrus] 1032—ab
business Max Flager's New Jersey supreme court upholds 512
epinephrine effect on [Grill] 94—ab
High See also Medicolegal Abstracts at end of letter M
high arterial and chronic pyelonephritis [Butler] 2099—ab
high arterial of juveniles of sympathetic origin [Tourniaire] 541—ab
high arterial pseudotumoral [Dereux] 1493—ab
hgb blood viscosity in 894
high caused by food allergy [Lilston] 466—ab
high diathermy applied to carotid sinus [Gorlero Pizarro] 1161—ab
high effect of splanchnic nerve resection [Page] 389—ah
high effects of sympathectomy 973
high epinephrine cause? [Dicker] 994—ab
hgb essential denervation of renal pedicle in [Lowenstein] 472—ab
hgb Hines Brown cold pressor test 1563
high in pregnancy prognostic value of cold test [Briggs] 393—ab
high induced by compressing renal artery 1640—E 2002
high malignant 1219
hgb obstetric problem in 1746
hgb pharmacodynamic action of caffeine [Martinet] 395—ab
hgb pheochromocytoma [Wells & Boman] *1176
high relation to nephritis 2079
high with experimental serum nephritis [Arnott] 86—ab

BLOOD PRESSURE—Continued

low with headaches 1065
measuring in pulsus alternans 1747
posture effect on [Wald] 1485—ab
test in pulmonary tuberculosis prognostic value [Kennedy] 79—ab
venous action of theophylline with ethylene diamine on [Greene & others] *1712
venous variations after ingesting water [Audaup Soule] 1943—ab
BLOOD TRANSFUSION action of transfused blood in surgical diseases [Gesso] 631—ab
continuous drip in gynecology and obstetrics [Winterton] 626—ab
donors dangerous universal [Balgaries] 317—ab
heterogenous in gastro intestinal diseases [Ryss] 1410—ab
in bronchopneumonia in infants [Murano] 1320—ab
in hemorrhage [Fourrester] 913—ab
in obstetrics [Black] 240—ab
in primary pneumonia [Arana] 741—ab
intrapertoneal [Koenen] 178—ab
of conserved blood [Fantus] *128 [Fila] 1410—ab
of conserved blood plasma in gynecologic hemorrhages [Alovski] 243—ab
of leukemic blood in agranulocytosis [Boek] 2108—ab
of stored cadaver blood [Shamor] 1318—ab
radial pulse in [Fourrester] 013—ab 1587—ab
total in dementia praecox [Reiter] 1862—ab
BLOOD VESSELS See also Arteries Capillaries Vasomotor Mechanism Veins
allergic changes in [Ehrstrom] 752—ab
changes after roentgen irradiation [Windholz] 1495—ab
Disease See also Arteries Arteriosclerosis Phlebitis Raynaud's Disease Thrombo Angitis Obliterans etc
disease Collens-Wilensky Intermittent Venous Occlusion Apparatus (Council report) 131 [Collens & Wilensky] *2125
disease passive exercise in diabetes [Edelen] 907—ab
disease (peripheral) simple external suction device for [Tenopir] 1158—ab
disorders angioneurosis with acroparesthesia 1657
impairment by pneumatic tools [Junghans] 832—ab
impairment in scarlet fever [Zischinsky] 1590—ab
mesenteric occlusion Intestinal infarct from [De Biasi] 242—ab
BLOODLETTING See Venesection
BNA 1473
BOARD See American Board
BODY Build See Constitution
Dead See Cadaver Cremation Death, Em
balming (cross reference)
fluids digitals in [Schulder] 1074—ab
fluids test for alcohol in 294
height mystery of growth 1056
Posture See Posture
Weight See also Obesity
weight control rôle of appetite [MacLagan] 1857—ab
weight during and after pregnancy [McIlroy] 86—ab (loss during) 1658
weight reduction advisable? 893
BOGGS RUSSELL radiologic tribute to 49
BOIL See Abscess Furunculosis
BONE MARROW See also Osteomyelitis
changes in diagnosing blood dyscrasias [Weller] 1315—ab
chronic nonleukemic myelosis [Hickling] 1406—ab
culture [Osgood] *933
depression (severe) after arsenphenamide [Lieberman] 535—ab
eosinophilia after intravenous oil injections [Engelbreth Holm] 472—ab
Extract See Angina agranulocytic
fibrosis with leukemoid blood picture [Metzler] 307—ab
hematopoietic hormone in hypophysis [Flaks] 1407—ab
myelocytes in normal spleen [Bertelsen] 1496—ab
Therapeutic Use See Anemia Angina agranulocytic Purpura haemorrhagica
BONES See also Cranium Joints Orthopedics Spine and under name of individual bones
asb and calcium effect on ossification 435—E
calcium stores in increasing [Aub] *1247
cysts (solitary) of long [Savari] 1239—ab
diseases causing pathologic fractures [Ghormley & others] *2111
diseases serum phosphatase in [Mitchell] 537—ab [Woodard] 2167—ab
formation of new bone in organic nervous diseases [Voss] 245—ab
formation promoting in fractured bone 608
Fractures See Fractures
Fractility See Osteoporosthrosis
glue infective warts in workers from [McLaughlin] 1857—ab

BONES—Continued
grafts (only) simplified technic [Harlins & Phemister] *1501
growth multiple dysostosis especially in twins [Harler] 1196—ab
healing in primordial and flat bones [Roegholt] 398—ab
involvement (late) in prenatal syphilis [Cole] *580
Marble See Osteosclerosis fragilis
Osteoporosis See Osteoporosis
pachyperiostosis of extremities [Glomo] 542—ab
regeneration after maggot therapy [Simon] 1:58—ab
skeletal deformities in children after empyema [Bisgard] 1077—ab
skeletal roentgen changes in congenital hemolytic jaundice [Aunna] 1860—ab
splints magnesium alloy report on 967
BONOMO GIOVANNI COSIMO A M A resolution on 44
BOOKS See Library Book Notices at end of letter B
BORNHOLM Disease See Myositis epidemica
BOSWELL S Hawaiian Pineapple 1127
BOTULISM See also Food poisoning from European commercially canned anti-pasto [Gelger] 466—ab
policephalomyelitis from [Schwartz] 620—ab
BOWELS See Intestines
BOWEN S Disease See Cancer precancerous
BOWMAN VISSCHER Test See Pregnancy diagnosis
BP Prescription 2005—B1
BRADY, WILLIAM 1282—E
BRAIN See also Cerebellum Cranium Head Meninges Nervous System and Medico legal Abstracts at end of letter M
abscess treatment 1828
Atrophy See also Cerebellum
atrophy (circumscribed) (Pick's disease) 371
blood vessels percutaneous arteriography [Schmidzu] 91—ab
blood vessels postoperative shock [Frisch] *109—ab
blood vessels reactions in embolism [Viharet] 2107—ab
blood vessels spasms 1296
changes produced by radium exposure [Collwell] 992—ab
complications after pneumococcus mastoiditis vaccination [Goldman & Herschberger] *1754
degeneration and senile arteriosclerosis 1145
diffuse white matter gliosis in mental defectives [Meyer] 1492—ab
disorders after epidemic parotitis [Johansen] 244—ab
effects of depth dose in epilation irradiations of head [Proppel] 471—ab
encephalogram (electro) 1738
encephalogram (electro) in schizophrenia during insulin shock [Hongland] 2096—ab
encephalography oxygen inhalation reduces symptoms after [Schwab] 391—ab
frontal turnlag syndrome [Halpern] 93—ab
Hemorrhage See also Medico legal Abstracts at end of letter M
hemorrhage after appendectomy [Gjessing] 1487—ab
infection with *Schistosoma japonicum* [Greenfield] 2104—ab
injuries and blood sugar 228
injuries (commoner) diagnosis treatment [Moore] *859
lesion after fever therapy [Hartman] *2116
lesion Mueck's epinephrine probe test [Van Dishoeck] 2110—ab
physiology exhibit of glass man 446
potentials in sleep [Blake] 1397—ab
Research Institute (new) at Georgetown 1284
research trends at various epochs 1648
surgery leukotomy technic [Mattos Pimenta] 91—ab
tumors angioma [Johansen] 834—ab
tumors diapaosis 2151
tumors nodding spasm or head nod 1747
tumors of base relation to pathologic sleep [Cox] 540—ab
tumors of lateral ventricle pneumography [Askeasy] 2107—ab
tumors (subtentorial) fluid pressure and [Bedford] 1080—ab
tumors treatment 1828
tumors unusual signs [Drydenforth] 1851—ab
tumors unusual types [Pfleger] 539—ab
BRAIN to prevent constipation [Dimock] 240—ab
BRANCHIAL APPARATUS cyst (true) [Meyer] 1851—ab
BRASS plumbing 299
poisoning symptoms treatment 972
BRAUER Operation (cardiolysis) See Pick's Syndrome
BRAZILIAN Congress of Chemistry second 148
Congress of Orthopedics and Traumatology (second) 720 1466
Institute for Investigation of Tuberculosis 96
BREAD See Flour

BRFAST See also Nipple Lactation
cancer [Cramer] 749—ab
cancer at menopause age [Olech] 903—ab
cancer or infection of ducts 1920
cancer preoperative irradiation [Cohn] 1850—ab
cancer prognostic value of sedimentation reaction [Jacoby] 1162—ab
cancer research on [Hagedoorn] 2026—ab
cancer Skinner lecture on 884
cancer treatment of burning sensation after [Fay] 1939
Inflammation chronic cystic 229 (endocrine therapy) [Lowis & Geschleker] *1894
Inflammation puerperal prevention [von Rucke] 1822—ab
Milk See Milk human
pain left inframammary [Smith] 468—ab
tuberculosis [Hudgins] 1235—ab
tumor dimpling sign [Scott] 828—ab
tumor or inflammation new semicologic sign [Benzadon] 242—ab
BREATH alcoholic beverages on 1474
BRECH Delivery See Labor presentation
BREWER S nostrums 1969—B1
BRIGHAM CHARLES B library given to U of California 137
BRITISH See also Empire Royal Army See Army
Association for Advancement of Science
Poulton's presidential address 1135
Columbia Medical Association 596
Diet See Diet
Medical Association See also Index to Organization Section
Medical Association (Fracture Committee report) 57 (capitulation fee) 218 (election) 596 (annual meeting) 597 (relation to public) 1553 (medal to Newland) 1555 (*Medicine Today and Tomorrow*) 1647 (precautions against air raids) 1825
Pharmaceutical Conference criticism of politicians 721
BROMETHANOL See Anesthesia
BROMIDE in Blood See Blood
intoxication mental disorders from [Cheavens] 1582—ab
Sodium See Peptic Ulcer treatment
BROMINE in gastric juice [Chatagnon] 89—ab
BROMO QUININE Grove's Laxative 716—E
BROMO FOAM 2156—B1
BRONCHIECTASIS treatment bilateral trilolectomy [Overholt] *127
BRONCHITIS See also Laryngotracheobronchitis Medico legal Abstracts at end of letter M
treatment expectorants [Brown] *268
tubercular [Winter & others] *258
BRONCHO ESOPHAGOSCOPY course by Dr Chevallier Jackson Paris 1137
BRONCHOPNEUMONIA in children fresh air treatment [Deckwitz] 833—ab
in infants hypercholela in feces in [Galeotti Flori] 318—ab
in infants transfusion in [Murano] 1320—ab
in leukemia inflammatory reactions of lung [Dreyfuss] 2107—ab
BRONCHOSCOPY 1214
BRONCHUS cancer in pulmonary cancer 443
[Mattick & Burke] 2121
cancer pseudo esophageal form [Rebattu] 1237—ab
obstructive action of theophylline with ethyl enediamine on [Greene & others] *1712
BROWN K 2005—B1
BROWN HINES Cold Pressor Test See Blood Pressure high
BROWNS (Dr) Baby Oil 2085—B1
BRUCELLERGIN Test See Undulant Fever diagnosis
BRUCELLASIS BRUCELOSIS See Undulant Fever
BUCCONASAL Membrane See Membranes
BUDAPEST Royal Medical Society centenary 1292 2153
BUERGER S Disease See Thrombo Angiitis Obliterans
BUERGI S Theory See Anemia treatment
BULLETIN of Inter Society Committee for Radiology See Journals
BUNIONS operations for 891
BURBOT Liver Oil N N R 29
Liver Oil (Rowell) 29
BURDICK SWD Magnetism 874
BUREAU See American Medical Association Medical Bureau
BURKI phenomenon synergic antigens 589—E
BURNING Bush See Dictamnus albus
BURNS caustic of eye [Hubbard] 1231—ab
from celluloid cans lighting [Fox] *1078
injuries of oral mucosa from sodium perborate 731
physiologic pathology treatment 1735
radial paralysis after [Bahis] 630—ab
severe and skin grafting [Padgett] 618—ab
treatment Aldrich mixture (acri violet brilliant green) 813 (reply) [Jackson] 1221
treatment of redness of skin etc after 2011
treatment silver nitrate and methyl rosaniline [Branch] 1313—ab
treatment silver nitrate ointment [Kissmeyer] 241—ab

BURNS—Continued
treatment tannic acid, [Fantus & Dyniewicz] *200
treatment vitamin A applications 145
BURSA Injection treatment 528
BURSITIS acute needle irrigation for [Paterson] 1758—ab
sartorius stimulating chronic arthritis [Mosecowitz] *1362
treatment sclerosing fluids in 381
BUTANE gas gloves necessity for effective due in 155
BUTOCKS intramuscular injection in 300
BYARS GEORGE axle grease as cancer cure 864

BOOK NOTICES

Abbott M E Atlas of Congenital Cardiac Disease 532
Abdomen Lehrbuch der röntgenologischen Differentialdiagnostik der Erkrankungen der Bauchorgane 817
Abdomen Quelques vérités premières en ou solidant telles en chirurgie abdominale 2163
Abdomen Operations of Surgery 532
Accidents and Their Prevention 457
Accidents Rehabilitation of Persons Injured by, 1933
Adair F L Maternal Care 1301
Adersen V editor Bernhard Bang Selected Works 982
Advertising radio Poisons Potions and Profits 1664
Agard W R Medical Greek and Latin 159
Agnesia Apraxia Aphasia 531
Ahesson S Über Veränderungen des Elektrokardiogramms bei orthostatischer Zirkulationsstörung 1224
Alajouanine L Les spasmes de la face et leur traitement 818
Albee F H Injuries and Diseases of the Hip 1752
Alcoholism Alkoholnachsweis bei Verkehrsunfällen 231
Alcoholism To Drink or Not to Drink 1752
Alexin or Complement 232
Allen C Modern Discoveries in Medical Psychology 531
Allen F M B Aids to Diagnosis and Treatment of Diseases of Children 532
Allergy Clinical 1750
Allergy Clinical Due to Foods Inhalants etc 384
Allergy Die atypische Pneumonie 386
Allergy Little Things in Life 457
Allergy Practical Application 1571
American Committee on Maternal Welfare Maternal Care 1301
American Dental Association Accepted Dental Remedies 2165
American Doctor's Odyssey 386
American Higher Education Surveys of 2164
American Medical Association Bureau of Legal Medicine and Legislation Medico legal Cases 458
American Medical Association Council on Pharmacy and Chemistry Annual Reprint of Reports 979
American Medical Association Council on Pharmacy and Chemistry Die Drüsen mit innerer Sekretion 900
American Medical Association Council on Pharmacy and Chemistry New and Nonofficial Remedies 1937 897
American Medical Association Work of Physicians and Medical Care 457
American Neurological Association Eugenic Sterilization 458
Anatomy Cunningham's Text Book 2013
Anatomy Die Nomina anatomica des Jahres 1895 (B N A) nach der anatomica des Jahres (1935) (I N A) 816
Anatomy of Fetal Pig 817
Anatomy Surgical 982
de Andrade G Diagnostico dos aneurysmas da aorta thoracica 981
Androgens Os hormônios testiculares 1663
Anemia Perniciosa Le principe antipernicieux de le stomac 613
Anesthesia Anestesia de base pela diallmalonilurea 1303
Anesthesia Inhalation Anesthesia 159
Anesthesia Local Technic 2093
Anesthesia On Incidence of Anesthetic Complications 614
Aneurysms Diagnostico dos aneurysmas da aorta thoracica 981
Angina Pectoris Les méthodes chirurgicales du traitement de l'angine de poitrine 17:3
Anthony A J Funktionsprüfung der Atmung 1392
Antimony Ergebnisse und Fortschritt der Antimontherapie 1149
Antonov A N Kichenyso o ganglioneromakh tsentralnoy nervnoy sistemy 1750
Anus Synopsis of Ano Rectal Diseases 736
Aphasia Value in Cerebral Localization 531
Arrhythmia Klinische Elektrokardiographie 737
Art Tableau de la caricature medicale depuis les origines jusqu'à nos jours 76
Arteries Diagnostico anatómico topográfico de la obstrucción arterial coronaria 817

Book Notices—Continued

- Aschoff, L. editor Veröffentlichungen aus der Konstitutions- und Wehrpathologie 1392
 Asthenia Veröffentlichungen aus der Konstitutions- und Wehrpathologie 1392
 Asthma Bacterial Flora of Respiratory Tract in 898
 Athletics What Every Athlete Should Know, 1937
 Atkinson D T Ocular Fundus in Diagnosis and Treatment 75
 Aubertin M E Le traitement du diabète infantile par l'insuline 930
 Australian Cancer Conference (Seventh) Report 1304
 Automobile accidents Alkoholnachweis bei Verkehrsunfällen 231
 Automobile Safe Driving Human Limitations 73
 Autopsy Diagnosis and Technique 459
 Autopsy Post Mortem Appearances 1479
 B N A Dic Nomina anatomica 816
 Babonnek L Les régimes chez l'enfant 735
 Baby Epilepsy 1148
 Baemeister A Die klimatische Behandlung der Tuberculose 1389
 Bacteria Dictionnaire des bactéries pathogènes 614
 Bacteriology of Specific Communicable Disease 900
 Bacteriology Text Book (Fairbrother) 1842
 Bacteriology Text Book of Microorganisms (Tanner) 1661
 Bacteriology Travaux pratiques de bactériologie 1070
 Bang, Bernhard Selected Works 982
 Barclay A E Digestive Tract 383
 Barker L F Live Long and Be Happy 734
 Barnes T C Laboratory Manual of General Physiology 1752
 Barnes T C Textbook of General Physiology 2165
 Bauer W W Health Questions Answered 1479
 Bazilevich I V Naris klinicheskoi fermentologii 304
 Beck S J Introduction to Rorschach Method 1478
 Bédère C Les hemorrhagies utérines avant et après la ménopause 74
 Bedford T Modern Principles of Ventilation and Heating 1068
 Behavior Human Machine 530
 Bell A J Feeding Diet and the General Care of Children 160
 Bell G H Experimental Physiology 615
 Bennett C Hypnotic Power 1305
 Berard M Les méthodes chirurgicales du traitement de l'angine de poitrine 1753
 von Bergmann G Funktionelle Pathologie 457
 Best C H Physiological Basis of Medical Practice 230
 Beumer H Über die Ernährung des Suglings 530
 Bick E M Source Book of Orthopaedics 232
 Bieling R Entstehung und biologische Bekämpfung typischer Infektionskrankheiten 737
 Bigler J W Handbook of Hygiene 1934
 Biliary Tract Analysis physique des calculs 2092
 Biliary Tract Diagnosis and Treatment of Diseases of 302
 Bing R Lehrbuch der Nervenkrankheiten in 30 Vorlesungen 1148
 Biochemistry Annual Review 1750
 Biochemistry Einführung in die allgemeine Biochemie 1070
 Biochemistry Manuel de biochimie 897
 Biochemistry Textbook of Applied Biochemistry 1571
 Biocolloids Traité de biocolloïdologie 1301
 Biological Assaying Manual 735
 Birch C L Hemophilia 737
 Birth Control Marriage and Periodic Abstinence 160
 Bitting A V Appertizing or the Art of Canning 1662
 Black M D Glasgow Royal Maternity and Women's Hospital Medical Report 383
 Blackwater Fever Historical Survey 1751
 Bladder Les péricystites 2092
 Blood Alkoholnachweis bei Verkehrsunfällen 231
 Blood Circulation Failure of Heart and Circulation 1661
 Blood Circulatory Disorders Pathologie und Therapie des peripheren Kreislaufes 614
 Blood Groups of Bantu of Southern Africa 331
 Blood Löffelchen der Blutmorphologie 459
 Blood Mikromethodik 1572
 Blood Pressure Cure of High Blood Pressure by Respiratory Exercises 530
 Blood Pressure Der Blutdruck des Menschen 532
 Blood Pressure High Blood Pressure 1389
 Blood Pressure High Pathologie und Therapie des peripheren Kreislaufes 614
 Blood Pressure Maladie hypertensive et syndromes d'hypertension 1391
 Blood sugar Les hyperglycémies 1304
 Blood Vessels Die Herz- und Gefäßkrankheiten 735
 Blood Vessels Physiology and Pathology of, 1225
 Blood Vessels Quelques vérités premières (on sol disant telles) en pathologie cardiovasculaire 1572
 Bloomfield J J Evaluation of Industrial Hygiene Problems 1150
 Blumer G editor Practitioners Library 75
 Böhmert W Untersuchung über die Todesfälle an Krebs 1223
 Bohning F Diphtherie und Konstitution 1068
 Bogert L J Dietetics Simplified 734
 Boisen A T Exploration of Inner World 530
 Bomskov C Methodik der Hormonforschung 979
 Bone Marrow Die Sternalpunktion als diagnostische Methode 230
 Bonnet H Travaux pratiques de bactériologie 1070
 Bontekoe Cornelis Opuscula selecta Neerlandicorum de arte medica 1225
 Bordet E Radiokymographie du cœur et des vaisseaux 1388
 Bosco G A Diagnostico anatomico topografico de la obstrucción arterial coronaria 817
 Boyd W Introduction to Medical Science 737
 Brahdly L editor Trauma and Disease 1224
 Brailn Agnosia Apraxia Aphasia Value in Cerebral Localization 531
 Brinlin Normal Encephalogram 1391
 Brain tumors of Archiv und Atlas der normalen und pathologischen Anatomie in typischen Röntgenbildern 458
 Brash J C editor Cunningham's Text Book of Anatomy 2013
 Briest K Lungentuberkulose in Verbindung mit anderen Erkrankungen 1934
 Brigrance W N Your Everyday Speech 160
 Bright Richard Original Papers on Renal Disease 161
 British Health Resorts 615
 British Masters of Medicine 459
 Brock S Basis of Clinical Neurology 1479
 Bromberg W Mind of Man 1388
 Bronchitis Bacterial Flora of the Respiratory Tract in 898
 Bronchus Tuberkulose legkikh i yarleniya naru shenlya bronkhialnoy prokhodimosti 1752
 Brook G B Experimental and Clinical Studies of Spine of Dog 615
 Brookes H S Jr Textbook of Surgical Nursing 2165
 Brown E L Physicians and Medical Care 457
 Brugsch T Ganzheitsproblematik in der Medizin 1068
 Brumpt E Précis de parasitologie 612
 Bull H B Biochemistry of Lipids 890
 Burnel F M Use of Developing Egg in Virus Research 384
 Burns B H Recent Advances in Orthopaedic Surgery 73
 Business Side of Medical Practice 1479
 Caduceus Serpents in Symbolism 75
 Calmette A L'infektion bacillaire et la tuberculose 736
 Cameron A T Recent Advances in Endocrinology 736
 Campbell H Aids to Pathology 1478
 Cancer and Diet 2013
 Cancer Carcinoma of Female Genital Organs 898
 Cancer Culture des tissus et cancer 1391
 Cancer Provision of Radio Therapeutic Departments in General Hospitals 1390
 Cancer Report of the Seventh Australian Cancer Conference 1304
 Cancer Research Principles and Policies of 1305
 Cancer Untersuchung über die Todesfälle an Krebs 1223
 Canned Foods Nutritive Aspects 818
 Canning Appertizing or the Art of 1662
 Canuyl G Les maladies du pharynx 1476
 Carbohydrates Oxidation in Acid Solution 1069
 Cardiovascular System Clinical Roentgenology 74
 Carnegie Foundation for Advancement of Teaching Examinations and Their Substitutes 385
 Carrillo E G La thyroïdectomie totale dans le traitement de l'insuffisance cardiaque et de l'angine de poitrine 1149
 Carter J B Fundamentals of Electrocardiographic Interpretation 897
 Cataract Its Preventive and Medical Treatment 1225
 Cataract Sclera Methods of Operation 303
 Cathart E P Dietary Survey 1070
 Cerebrospinal Fluid Cytologie du liquide céphalo rachidien normal 899
 Cerebrospinal Fluid Osmyri Ikorovlogii 1662
 Chabanier H Diabète et chirurgie 2165
 Chalmers L W Inimable Side of Woman's Life 614
 Chaplin F S Research Memorandum on Social Work in the Depression 2163
 Charner What It Means to Grow Up 980
 Charterhouse Rheumatism Clinic 2092
 Chatterjee S Materia Medica 981
 Chemical Physiology Essentials (Halliburton) 1390
 Chemistry Man in a Chemical World 900
 Chemistry Mikromethodik 1572
 Chemistry of Food and Nutrition (Sherman) 531
 Chemistry Out of The Test Tube 808
 Chemistry Physiological (McClendon) 1070
 Chemistry Physiological (Wilson), 1068
 Chemistry physiological Einführung in die chemische Physiologie 1751
 Chemistry Quantitative Pharmaceutical 2093
 Cheney W F Diagnosis and Treatment of Diseases of Stomach and Intestines 736
 Chenoweth L B School Health Problems 613
 Child Guidance Personality and Cultural Patterns 1569
 Children Feeding Diet and General Care of 160
 Children Feeding Our Children 1150
 Children Handicapped by Cerebral Palsy 122
 Children Quelques vérités premières (on sol disant telles) en chirurgie infantile 209
 Children Reading Writing and Speech Problems 302
 Children Studies in Sibling Rivalry 980
 Chirophy Toe Casting and Liquid Rubber Technique 981
 Cholesterol Une forme cérébrale de la cholestérolémie généralisée 2014
 Cisterna Magna Experimental and Clinical Studies of Spine of Dog 615
 Clemensen C E Deficiency of A Vitamin and Visual Dysplasia 73
 Climate Die klimatische Behandlung der Tuberkulose und ihre heutige Bewertung 1389
 Clinical Medicine System of (Sarli) 158
 Cobb W F Everyday First Aid 1151
 Colgnard J Spectacle of a Man 2164
 Colon as a Health Regulator 157
 Combustion Spontaneous Literary Curiosity 134
 Committee on Costs of Medical Care Physicians and Medical Care 457
 Communicable Disease Bacteriology of 900
 Complement or Alevin 232
 Conybeare J J editor Textbook of Medicine 304
 Cooksey F A History of Medicine in State of New York and County of Monroe 532
 Coroners Physicians Autopsy Diagnosis and Technique 459
 Corpus Luteum Hormone Studies and Investigations into 736
 Cosmetic Dermatology Dictionary of Ingredients 232
 Cosmelle Take Care of Yourself 532
 Costler A Encyclopaedia of Sexual Knowledge 532
 Cough La touse 1068
 Crossen H S Synopsis of Gynecology 1032
 Csallner C H Das Geschlechtsleben 531
 Culotta A La touse 1068
 Cunningham's Text Book of Anatomy 2013
 Currie J R Manual of Public Health Laboratory Practice 982
 Cursetji J J Assessment of Risks in Life Assurance Practice 1572
 Damm P N Menstrualstörungen hormonellen Ursprungs 737
 Davidoff L M Normal Encephalogram 1391
 Davis A E Cataract 1225
 Davis M M Public Medical Services 815
 Dawkins C J M Incidence of Anesthetic Complications 614
 Deafness Hearing and Speech in Deaf Children 1148
 Deafness Use of Hearing Aids Reports of Committee 529
 Dent J J Human Machine 530
 Dental Remedies Accepted 2165
 Dental Students Surgery for 1392
 Dentistry Public Health Principles and Practice 1663
 Dermatology Common Skin Diseases 1148
 Dermatology Cosmetic 232
 Dérot M Les hépatonéphrites 385
 Dextrose Therapy in Everyday Practice 1664
 Diabetes A Modern Manual 982
 Diabetes Mellitus Diabète et chirurgie 2165
 Diabetes Mellitus Le traitement du diabète infantile par l'insuline 980
 Diabetes Mellitus Lécani diabète 1150
 Diabetes Mellitus Treatment (Joslin) 383
 Diabetes Mellitus Über einige neue Arzneimittel 982
 Diagnosis Clinical Der klinische Blick 818
 Diagnosis Diagnostics of Pain 615
 Diagnosis Manual of Radiological Diagnosis 160
 Diagnosis Medical Diagnosis 615
 Diagnosis Physical Diagnosis (Major) 230
 Diagnosis Physical Diagnosis (Sutton) 1669
 Diagnostic Roentgenology Textbook 2092
 Diathermy Kurzwellentherapie 817
 Dictionary Dictionnaire des bactéries pathogènes 614
 Dictionary of Ingredients Cosmetic Dermatology 232
 Diet Cancer and Diet 2013
 Diet Les régimes chez l'enfant 735
 Diet Nutritive Value of Indian Foods and Planning of Satisfactory Diet 345
 Diet Your Diet and Your Health 1226
 Dietary Survey in Terms of Actual Foodstuffs Consumed 1070
 Dietetics Pediatric 1148
 Dietetics Simplified 734

Book Notices—Continued

- Digestive Tract Radiological Study 383
Digitalis Digitalisfibel für den Arzt 818
Digitalis William Withering 303
Diphtheria Diphtherio und Konstitution 1068
Diphtheria Dosage of Antitoxin in Report of Departmental Committee 736
Disease and the Man 2165
Disease Introduction to Medical Science 737
Disease Trauma and 1224
Dispensary of United States 158
Dixon W E Manual of Pharmacology 1067
Dog Experimental and Clinical Studies of Spino 615
Domaiel P Les péricardites 2092
Donzelot E Quelques vérités premières (ou sol disant telles) en pathologie cardiovasculaire 1572
Douglas C G Human Physiology 458
Dressler W Klinische Elektrokardiographie mit einem Grundriss der Arrhythmien 737
Drugs Arzneiverordnungen 1070
Dryer H Aids to Physiology, 2093
Duham F Précis de physiothérapie clinique 1389
Dumas C Maladie hypertensive et syndromes d'hypertension 1391
Durfee C H To Drink or Not to Drink 1752
Dust of Our Time 533
Dyachenko S V editor Uroshkaya bolczn v Zabyskale Vypusk vityor 1664
Dyes O Archiv und Atlas der normalen und pathologischen Anatomie in typischen Röntgenbildern 458
Dyson J N Practice of Ionization 1663
Ear Diseases of the Nose Throat and Ear 000
Ear Practitioners Library 75
East T Failure of the Heart and Circulation 1661
Economic Depression Research Memorandum on Social Aspects 2163
Economic Problems of Modern Life 304
Economics Business Side of Medical Practice 1479
Economics For Peace and Good 981
Eddy C E Physical Aspects of Radium and Radon Therapy 1842
Eddy W H Arithmoses 153
Eden E Digitalisfibel 818
Education Medical Physicians and Medical Care 457
Eells W C Surveys of American Higher Education 2164
Eggs Use of Developing Egg in Virus Research 854
Electricity Die bioelektrischen Erscheinungen der Hirnrindenfelder 386
Electrocardiographic Interpretation (Carter) 897
Electrocardiography Clinical (Lewis) 2013
Electrocardiography (Maher) 1223
Electrocardiography Über Veränderungen des Elektrokardiogramms bei orthostatischer Zirkulationsstörung 1224
Elliott J Scalpel and Sword 160
Elsdon Dew R Blood Groups of Bantu of Southern Africa 531
Embryology Textbook of 1149
Encephalogram Normal 1391
Encyclopedia of Sexual Knowledge 532
Endocrines Chemie der Inkrete und ihre wichtigsten Darstellungsmethoden 1842
Endocrines in Obstetrics and Gynecology 1840
Endocrines Methodik der Hormonforschung 979
Endocrinology Clinical Application and Treatment 1661
Endocrinology Recent Advances in 736
Endoscopy of Uterus Atlas glisteroskopi v aku sherstie 304
English O S Common Neuroses of Children and Adults 2013
Environment Human Genetics and Its Social Import 612
Enzymes Die Fermente und ihre Wirkungen 1069
Ephraim J W Take Care of Yourself 532
Epilepsy Die Veranlagung zu Krampfanfällen 159
Erlanger J Electrical Signs of Nervous Activity 1294
Ernst J Hautdesinfektionsprobleme 899
Ethics Medical Introduction to General Practice 232
Everett M R Oxidation of Carbohydrates in Acid Solution 1069
Ewing A W G Use of Hearing Aids 529
Examinations and Their Substitutes 385
Exanthemata Acute History of 75
Exercise corrective Kinesiology 2093
Exercises Respiratory Cure of High Blood Pressure by 530
Exercises Techniquo of Underwater Exercises 1096
Eyes Atlas der Augenkrankheiten 160
Eyes Hand Book of Ocular Therapeutics 531
Eyes Internal Diseases and Atlas of Ophthalmoscopy 231
Eyes Ocular Fundus in Diagnosis and Treatment 75
Eyes Practitioners Library 75
Faarup C Nogle Undersøgelser over Widalreaktionen ved Tyfus og Paratyfus 818
Facial Neuralgia 303
Fairbrother R W Text Book of Medical Bacteriology 1842
Falknor N N Twcedy a Practical Obstetrics 1571
Falls F H Obstetric and Gynecologic Nursing 2014
Family Care of Mental Patients 520
Fechleimindness Etiology of Mental Deficiency 1478
Feeding Our Children 1150
Ferments Nark klinichnoi fermentologii 304
Ferri N A Behavior of Health 75
Fetus Anatomy of Fetal Pig 817
Fieser L F Chemistry of Natural Products Related to Phenanthrene 159
Ficssinger N Quelques vérités premières (ou sol disant telles) sur les maladies du foie 159
First Aid Everyday 1151
Fischgold H Radiokymographie du coeur et des vaisseaux 1388
Fischel M Your Diet and Your Health 1226
Fishberg A M Heart Failure 1151
Fisher W A Ophthalmoscopy Retinoscopy and Refraction 303
Fisher W A Senile Cataract 303
Flechner J T Doctors on Horseback Pioneers of American Medicine 1934
Food Appertizing or the Art of Canning 1662
Food Canned Nutritive Aspects of 818
Food Chemistry of (Sherman) 531
Food Clinical Allergy 384
Food Dietary Survey in Terms of Actual Food stuffs Consumed 1070
Food Little Things in Life 457
For Penco and Good Handbook of Contemporary Politics 981
Ford F R Diseases of Nervous System in Infancy Childhood and Adolescence 2164
Forel August Out of My Life and Work 1933
Fox R F editor, British Health Resorts 615
Fractures Modern Treatment 979
Frew R S Disease in Childhood 385
Frey W Die Herz und Gefasskrankheiten 73
Friedman A P Osnovy Ikkvologii 1662
Friedman L J Textbook of Diagnostic Roentgenology 2092
Gadé (Dr F G) pathologisk anatomiske laboratorium i Bergen 1912 737
Ganglioncromas k ychenlyu o ganglionevromakhi tsentralnoy nervnoy sistemy 1750
Gantt W H Russian Medicine 1932
Ganzheitsproblematik in der Medizin zugleich eine Einführung in die medizinische Erkenntnislehre 1068
Gartland R M Psychiatric Social Service in Children's Hospital 1149
Gastroscopy Endoscopic Study of Gastric Pathology 1569
Gellhorn E La perméabilité 231
Genetics Human Genetics and Its Social Import, 612
Genetics Spontane und strahleninduzierte Mutation 1662
Genetics Wissenschaftliche Forschungsberichte 1478
Genital Organs Female Carcinoma of 898
Germany Concept of Social Medicine 1779 1932 615
Gersh A B Occupational Hazards and Painter 74
Gervols M Le bacille de type bovin dans la tuberculose humaine 1570
Gifford S R Handbook of Ocular Therapeutics 531
Gignoux J E What Every Athlete Should Know 1663
Gildersleeve E Baby Epicure 1148
Giorgacopulo D Le varicel 386
Glandular Physiology and Therapy Die Drüsen mit innerer Sekretion 900
Glasgow Royal Maternity and Women's Hospital Medical Report 383
Glorieux P La spondylolyse et ses conséquences 1223
Goble G B Workbook in Health 816
Göller Medizinische Praxis 1067
Gómez V Cirugía reparadora de las lesiones de los nervios periféricos 74
Gonorrhea Lehrbuch und Atlas der Haut und Geschlechtskrankheiten 982
Goodman H Cosmetic Dermatology 232
Gordon S M editor Accepted Dental Remedies 2165
Gray H M W Colon as a Health Regulator 157
Greek Medical Greek at a Glance 159
Greineder K Tomographische Diagnostik der tuberkulösen Kaverne 1479
Griffith J P C Diseases of Infants and Children 1070
Grinker R R Neurology 1476
Grote L R editor Medizinische Praxis 1067
Guedel A E Inhalation Anesthesia 159
Guiding Your Life with Psychology as Key 1388
Gunn J A Introduction to Pharmacology and Therapeutics 386
Gutzelt K Die Gastroskopie 1751
Gymnastics Underwater Technique 1226
Gynecologic Nursing 2014
Gynecology Endocrines in 1840
Gynecology Synopsis of 1032
Hall I S Diseases of the Nose Throat and Ear 900
Halliburton W D Essentials of Chemical Physiology 1390
Hamilton J R Safe Driving 73
Harris I High Blood Pressure 1389
Harris L J Vitamins 531
Harris W Facial Neuralgia 303
Hartwell H A Dust of Our Time 533
Hauduroy P and others Dictionnaire des bactéries 614
Hawley G Kinesiology of Corrective Exercise 2093
Hay Fever Treatment by Intranasal Ionization 230
Health and a Day Addresses 1664
Health Behavior of 75
Health British Health Resorts 615
Health National Health Series 20 volumes 613
Health Protection of Welders 614
Health Public Berliuth Ha zibur 900
Health Public Ezrahi Rishonah Sefer shilmushli lekol adam 900
Health Public Manual of Laboratory Practice 982
Health public Sanitarintb 900
Health Questions Answered 1479
Health School Health Problems 613
Health Take Care of Yourself 532
Health Workbook for High School Girls 816
Hearing Aids Use of Reports of Committee 529
Hearing and Speech in Deaf Children 1148
Heart Allgemeine Elektrokardiographie 816
Heart Das Reizleitungssystem und die Nerven des Säugetierherzens 1224
Heart Der Myokardinfarkt 1225
Heart Die Herz und Gefasskrankheiten 735
Heart Disease (Wible) 304
Heart Disease Atlas of Congenital Cardiac Disease (Abbott) 532
Heart Disease Development of Cardiac Enlargement in Disease of the Heart 1750
Heart Disease La thyroïdectomie totale dans le traitement de l'insuffisance cardiaque et de l'angine de poitrine 1149
Heart Electrocardiographic Interpretation (Carter) 897
Heart Electrocardiography (Lewis) 2013
Heart Electrocardiography (Maher) 1223
Heart Failure 1151
Heart Failure of Heart and Circulation 1661
Heart Klinische Elektrokardiographie mit einem Grundriss der Arrhythmien 737
Heart Physiology and Pathology 1225
Heart Quelques vérités premières (ou sol disant telles) en pathologie cardiovasculaire 1372
Heart Radiokymographie du coeur et des vaisseaux 1388
Heart Über Veränderungen des Elektrokardiogramms bei orthostatischer Zirkulationsstörung 1224
Heart Zehn Vorlesungen über Kymographie 1392
Heating Modern Principles 1068
Hellmeyer L Das Serum Eisen und die Eisenmangelkrankheit 1842
Helsel V American Doctor's Odyssey 386
Hemophilia 737
Henriksen S D Studies on the Bacterial Flora of the Respiratory Tract 898
Heredity Human Genetics and Its Social Import 612
Hertzler A E Surgical Pathology of Thyroid Gland 900
Hertzler A E Technik of Local Anesthesia 2093
Heubner W editor Arzneiverordnungen 1070
Hewitt J A Essentials of Chemical Physiology 1390
Higginson G Anatomie Neuro Effector Systems 1392
Hill C What Is Osteopathy? 2162
Hip Injuries and Diseases of the Hip 1752
Hirschman L J Synopsis of Ano Rectal Diseases 736
Histology Handbook of Microscopical Technique 1150
Hochrein M Der Myokardinfarkt 1225
Hodann M History of Modern Morals 159
Hoffman F L Cancer and Diet 2013
Hoffmann K Alkoholnachweis bei Verkehrsunfällen 231
Holcomb B C Who Gave the World Syphilis? 157
Hollender A R Physical Therapeutic Methods in Otolaryngology 160
Holmes E Metabolism of Living Tissues 615
Holmes H A Out of the Test Tube 898
Holmes S J Human Genetics 612
Holt J G II Marriage and Periodic Abstinence 160
Hoppe A W Manual of Operating Room Procedures 736
Horder Lord Health and a Day Addresses 1664
Hormones Little Things in Life 457
Hormones Vitamins Minerals and 231
Hospital American and Canadian Hospitals 1933
Hospital Glasgow Royal Maternity and Women's Hospital Medical Report 383
Hospital psychiatric Practical Psychology for Nurses and Other Workers 1477

Book Notices—Continued

- Hospital Psychiatric Social Service in a Children's Hospital Chicago 1149
Howard (Mrs.) H. Seamen's Handbook for Shore Leave 1664
Hoyle C. Chronic Millary Tuberculosis 1842
Hueck W. Morphologische Pathologie, 1476
Human Machine 530
Humphris F. H. Emanotherapy 1840
Hyde R. R. Laboratory Outline in Filterable Viruses 303
Hygiene Fundamentals of Personal Hygiene 160
Hygiene Handbook of 1934
Hygiene Intimate Side of a Woman's Life 614
Hypnotic Power 1305
I. A. Die Nomina anatomica 816
Ibáñez Benavente A. Cirugía reparadora de las lesiones de los nervios periféricos 74
Immunology Die atypische Pneumonie 386
India Nutritive Value of Indian Foods 385
Industry Health Protection of Welders 614
Industry Hygiene Problems of a State 1150
Industry, Man in a Chemical World 900
Industry Occupational Hazards and Painter 74
Industry Pneumonokonioses (Silicosis) 2093
Industry Trauma and Disease 1224
Infants Études sur les maladies 818
Infants feeding Über die Ernährung des Säuglings 530
Infants New Born Diseases 457
Infants Nursery Years 304
Infants Unreife und Lebensschwache 2165
Infection Alimentary Factor in Disease 2014
Infectious Disease Die atypische Pneumonie 386
Infectious Disease Entstehung und histologische Bekämpfung typischer Infektionskrankheiten 737
Infectious Disease Maladies infectieuses 1148
Insulin therapy Über einige neue Arzneimittel II 982
Insurance Assessment of Risks in Life Assurance Practice 1572
Insurance Health Concept of Social Medicine Germany 1779-1932 615
Inter Departmental Committee on Rehabilitation Interim Report 1933
International Medical Annual 900
Intestines Diagnosis and Treatment of Diseases 736
Intestines, Over het elimineren van darmgassen storend voor de röntgendiagnostiek 1151
Intestines Studies on Human Intestinal Protozoa 1390
Ionization Practice of 1663
Iron Das Serum Eisen und die Eisenmangelkrankheit 1842
Isaacs S. Nursery Years 304
Ives J. E. Measurements of Ultraviolet Radiation and Illumination in American Cities 1572
Jackson C. Larynx and Its Diseases 459
Jackson J. A. Guiding Your Life with Psychology as Key 1388
Jackson S. Practical Orthoptics in Treatment of Squint 458
Jenkins G. L. Quantitative Pharmaceutical Chemistry 2093
Jessen H. Cytologie du liquide céphalo rachidien 899
Joint Range Chart 1226
Jordan H. E. Textbook of Embryology 1149
Joslin E. P. Treatment of Diabetes Mellitus 383
Joyeux C. Précis de médecine coloniale 1934
Kandel I. L. Examinations and Their Substitutes 385
Koyne G. G. Control of Tuberculosis in England Past and Present 1841
Kellner F. Die atypische Pneumonie 386
Kemp T. Prosthetics 737
Kenny E. Infantile Paralysis and Cerebral Diplegia 2092
Kidney Les hépatonéphrites 385
Kidney Original Papers of Richard Bright on Renal Disease 161
Klare K. Anleitung zur Konstitutionsdiagnostik bei kindlicher Tuberkulose 1391
Kleitman N. Sleep Characteristics 1932
Koch E. Allgemeine Elektrokardiographie 816
Koli I. S. Medical Urology 1303
Kompaneytsa S. M. editor Bolezni ukha i nosa i gortla 303
Kopaczewski W. Traité de biocoïdologie 1301
Kopsch F. Die Nomina anatomica 816
Kornmüller A. E. Die elektrischen Erscheinungen der Hirnrindfelder 386
Kremer W. Die Entwicklung der Lungen tuberkulose des Erwachsenen 1479
Kroeger G. Concept of Social Medicine Germany 1779 1932 815
Krueger W. W. Fundamentals of Personal Hygiene 160
Krusen F. H. Light Therapy 386
Kuczyński M. H. Alimentary Factor in Disease 2014
Künkel F. What It Means to Grow Up 980
Kulenkampff D. Allgemeine Chirurgie 1068
Kurzbach R. Endocrines in Obstetrics and Gynecology 1840
Kyllin E. Der Blutdruck des Menschen 532
Laboratory Manual of General Physiology 1752
Laboratory Notes on Clinical Laboratory Methods U of Glasgow 1151
Laboratory Practice Manual of Public Health 982
Lancet Prognosis 459
Longerhans P. Contributions to Microscopic Anatomy of Pancreas [1869] 901
Lapham R. F. Disease and the Man 2165
Laqueur A. Die Praxis der physikalischen Therapie 1392
Larynx and Its Diseases 459
Latin Medical at a Glance 159
Lees D. Practical Methods in the Diagnosis and Treatment of Venereal Diseases 2014
Le Fleming E. K. Introduction to General Practice 232
Lehnertz E. Einführung in die chemische Physiologie 1751
Lemierre A. Maladies infectieuses 1148
Leriche R. La chirurgie de la douleur 1932
Leveuf J. Études sur le spinale bifida 532
Levy A. J. Berlüh Ha zihur 900
Levy A. J. Ezrah Rishonah 900
Levy A. J. Sanitorluth 900
Levy D. M. Studies in Sibling Rivalry 980
Lewis E. St. E. Going to Make A Speech? 532
Lewis T. Clinical Electrocardiography 2013
Liehnshy V. V. Soubor prací venovanych 2093
Liesegang R. E. Wissenschaftliche Forschungsberichte 1478
Life and Death Autobiography of Surgeon 159
Life Live Long and Be Happy 734
Life Saving and Water Safety 818
Light Measurements of Ultraviolet Radiation and Illumination in American Cities 1572
Light Therapy 386
Lipids Biochemistry 899
Lipids Une forme cérébrale de la cholestérol-nose généralisée 2014
Litvak B. I. Atlas glisterskopi v akusherstve 304
Live Long and Be Happy 734
Liver Diagnosis and Treatment of Diseases 302
Liver Les hépatonéphrites 385
Liver Quelques vérités premières (ou sol disant telles) sur les maladies du foie 159
Lohr W. Wundheilung 981
Lord E. E. Children Handicapped by Cerebral Palsy 1225
Lowman C. L. Technique of Underwater Gymnastics 1226
Luck J. M. Annual Review of Biochemistry 1750
Lungs collapse Atelctasen bei kavernöser Lungentuberkulose 1479
Lungs gangrene Studies on Bacterial Flora of Respiratory Tract 898
Lungs Incidence of Anaesthetic Complications 614
Lungs Tomographische Diagnostik der tuberkulösen Kaverne 1479
Lyle K. Practical Orthoptics in Treatment of Squint, 458
Lymphatic System Physiologie du système lymphatique 1933
Lymphogranuloma venereum Chetvertaya venerezhskaya bolezni 1752
Lymphogranulomatosis El grupo indeterminado de las afecciones molligas de los ganglios linfáticos 1479
McCorty R. C. Safeguarding Mental Health 1391
McClendon J. F. Physiological Chemistry 1070
McClung C. E. editor Handbook of Microscopic Technique 1150
Maher C. C. Electrocardiography 1223
Majocchi A. Life and Death 159
Major R. H. Physical Diagnosis 232
Mallowsky M. C. Carcinoma of Female Genital Organs 898
Mansfield W. Materia Medica Toxicology and Pharmacognosy 737
Marfan A. E. Études sur les maladies de l'enfance 818
Margolis H. V. editor Clinical Reviews of the Pittsburgh Diagnostic Clinic 1069
Marion G. Quelques vérités premières (ou sol disant telles) en urologie 1478
Marriage Das Geschlechtsleben 531
Marshall M. S. editor Bacteriology of Specific Communicable Diseases 900
Martin E. Dextrose Therapy in Everyday Practice 1664
Moson R. L. Preoperative and Postoperative Treatment 1751
Massie G. Surgical Anatomy 982
Materia Medica Including Pharmacology and Therapeutic Hints 981
Materia Medica Toxicology and Pharmacognosy 737
Mathews A. P. Vitamins Minerals and Hormones 231
Maurer K. Chemie der Inkrete und ihre wichtigsten Darstellungsmethoden 1842
Mauz F. Die Veranlagung zu Krampfanfällen 159
May C. H. Manual of Diseases of Eye 1842
Means J. H. Thyroid and Its Diseases 456
Medical Practice Business Side 1479
Medical Practice Introduction to General Practice 232
Medical Research Council Development of Cardiac Enlargement 1750
Medical Research Council Medical Uses of Radium 734
Medical Research Council Use of Heaving Aids 529
Medical Service Physicians and Medical Core 457
Medical Services Public Survey of Tax Supported Medical Care in U. S. 815
Medicine Ganzheitsproblematik in der Medizin zugleich eine Einführung in die medizinische Erkenntnislehre 1068
Medicine history Adaptation in Pathological Processes (Welch 1897) 1934
Medicine history Brief Rule to Guide the Common People of New England the Small Pocks or Vesicles 1677/8 1934
Medicine history British Masters of Medicine 459
Medicine history Consult medic (Morgagni) 157
Medicine history Discourse upon the Institution of Medical Schools in America (Morgan 1765) 1934
Medicine history Doctors on Horseback Pioneers of American Medicine 1934
Medicine History of Medicine in State of New York and County of Monroe 532
Medicine history Opuscula selecta Neerlandicorum de arte medica 1225
Medicine history Russian Medicine 1932
Medicine Practice of Textbook of 2164
Medicine Practitioners Library 75
Medicine Taylor's Practice of 1302
Medicine Textbook of (Conybeare) 304
Medicolegal Cases 458
Meyer N. C. editor, Studies in Psychology of Art 1389
de Mello R. F. Os hormônios testiculares 1663
Menopause Les Hémorragies utérines avant et après la ménopause 74
Menstruation Marriage and Periodic Abstinence 160
Menstruationsstörungen hormonalen Ursprungs 737
Mental Disease Mind of Man 1388
Mental Disorder Exploration of the Inner World 530
Mental Health Safeguarding 1391
Mental Hygiene Personality and the Cultural Pattern 1569
Mental Patients Family Care 529
Merck's (E.) Jahressbericht 1151
Metabolism of Living Tissue, 615
Metropolitan Life Insurance Company Health Protection of Welders 614
Metzger M. Le chirurgien devant l'État puerpéral 158
Migraine ophtalmique 1069
Miles A. Operative Surgery 304
Milk and Nutrition 1477
Milk Prices Federal and State Control, 459
Mind of Man 1388
Minerals Vitamins and Hormones 231
Mitchiner P. H. Surgery for Dental Students 1392
Möller Christensen E. Studie über das Zusammenspiel von Hypophysen und Ovarialhormonen 1752
Mollart P. Interprétation du fonctionnement du système nerveux 1477
Mondor H. Quelques vérités premières (ou sol disant telles) en chirurgie abdominale 2163
Morals Modern History of 158
Morell P. Poisons Poisons and Profits 1664
Morgagni G. Consult medic 157
Morgan J. Discourse upon the Institution of Medical Schools in America (1765) 1934
Morphine Habit and Its Painless Treatment 302
Morrison H. Contributions to Microscopic Anatomy of the Pancreas (Laengerhans 1869) 901
Munch J. C. Manual of Biological Assaying 735
Narcotics Traité de biocoïdologie, 1301
National Health Series, 20 volumes 613
Negroes Blood Groups of Banu of Southern Africa 531
Negus V. E. Discoses of the Nose and Throat 1572
Nervous Activity Electrical Signs 1224
Nervous System Autonomic Neuro Effector Systems 1392
Nervous System, Basis of Clinical Neurology 1479
Nervous System Disease of Infancy Childhood and Adolescence 2164
Nervous System Interprétation du fonctionnement du système nerveux par la notion de subordination 1477
Nervous System K. Yeheniya o ganglionerromakh tsentralnoy nervnoy sistemy 1750
Nervous System Lehrbuch der Nervenkrankheiten in 30 Vorlesungen 1149
Neuralgia Facial 303

Book Notices—Continued

- Neurology 1476
Neurology Clinical Basis of 1479
Neuroses Common of Children and Adults 2013
Neuroses Common Their Treatment by Psychotherapy 1572
Neuroses Spectacle of a Man 2164
Neustatter W L Modern Psychology in Practice 1841
New and Nonofficial Remedies 1037 897
New York History of Medicine 532
Nielsen J M Agnosia Apraxia Aphasia 531
Nissen R Chirurgische Indikationen 1664
Nose Diseases of (Hall) 900
Nose Diseases of (Thomson) 1572
Nursery Years 304
Nurses Practical Psychology 1477
Nursing Manual of Operating Room Procedures 36
Nursing Obstetric and Gynecologic 2014
Nursing Pediatric 304
Nursing Surgical, Textbook of 2165
Nutrition Alimentary Factor in Disease 2014
Nutrition Chemistry of Food and Nutrition (Sberman) 531
Nutrition Milk and Nutrition 1477
Nutrition Difficulties Management of 2163
Obstetric Nursing 2014
Obstetrics Childbirth 982
Obstetrics Endocrines in 1840
Obstetrics Maternal Care 1301
Obstetrics Tweedy's Practical 1571
Oliver J R Spontaneous Combustion A Little Curiosity 1934
Ombredanne L Quelques vérités premières (ou solides) en chirurgie infantile 529
Ombredanne L editor, Traité de chirurgie orthopédique 232
Ombredanne M Quelques vérités premières (ou solides) en oto-rhino-laryngologie 2163
Ophthalmology Hand Book of Ocular Therapeutics 531
Ophthalmology Manual of Diseases of the Eye 1842
Ophthalmoscopy Internal Diseases of Eye and Atlas of 231
Ophthalmoscopy Retinoscopy and Refraction 303
Oppenheimer C Die Fermente und ihre Wirkungen 1069
Oppenheimer C Einführung in die allgemeine Biochemie 1070
Orthopaedic Surgery Elements 1664
Orthopaedic Surgery Handbook 386
Orthopaedic Surgery Recent Advances 73
Orthopaedic surgery Traité de chirurgie orthopédique 232
Orthopaedics Source Book 232
Orthoptics Ophthalmoscopy 303
Orthoptics Practical in Treatment of Squint, 458
Orton S T Reading Writing and Speech Problems in Children 302
Osborn T W B Complement or Alevin 232
Osman A A Original Papers of Richard Bright on Renal Disease 161
Osteo arthritis Urovskaya bolezn v Zahaykale 1664
Osteopathy What Is Osteopathy? 2163
Otitis Media Die akute Mittelohrentzündung 1664
Otolaryngology Bolezn ukha nosa i gorla 303
Otolaryngology Physical Therapeutic Methods 160
Otorhinolaryngology Practitioners Library 75
Otorhinolaryngology Quelques vérités premières (ou solides) en oto-rhino-laryngologie 2165
Out of My Life and Work (Forel) 1933
Out of the Test Tube 898
Pain Diagnostics of 615
Pain La chirurgie de la douleur 1932
Painter Occupational Hazards 74
Palestine Berluth Ha Zibur 900
Palestine Ezrab Risbonah 900
Palestine Sanitariuth 900
Palmer J H Development of Cardiac Enlargement 1750
Palumbo J Curietherapie in dermatologia 2014
Pancreas Contributions to Microscopic Anatomy (Langerhans 1869) 901
Paralysis Children Handicapped by Cerebral Palsy 1225
Paralysis spastic Infantile Paralysis and Cerebral Diplegia 2092
Parasitology Précis de parasitologie 612
Paratyphoid Nogle Undersøgelser over Vidal reaktioner ved Tyfus og Paratyfus 818
Perry T W Immortal Names and Other Poems 1933
Pathology Adaptation in Pathological Processes (Welch 1897) 1934
Pathology Aids to 1478
Pathology Autopsy Diagnosis and Technique 459
Pathology Funktionelle Pathologie 457
Pathology Morphologische Pathologie 1476
Pathology Post Mortem Appearances 1479
Patell and the Weather 1292
Patterson S H Economic Problems of Modern Life 304
Peacock A H Globe Trotting with a Surgeon 015
Pediatric Diets 1148
Pediatric Aids to Diagnosis and Treatment of Diseases of Children 532
Pediatrics Disease in Childhood 385
Pediatrics Diseases of Infants and Children 1070
Pediatrics Diseases of the Nervous System 2164
Pediatrics Diseases of Newborn 457
Pediatrics Handbook on Diseases of Children 1150
Pediatrics Nursing 304
Pediatrics Synopsis of 1009
Pelpel A P Unrife und Lebensschwache 2165
Peptic Ulcer Over zweven in maag en duodenum bij Inheemschen en Chinezen in Nederlanden 1150
Porkela J D editor Chetvertaya veneriches kaya bolezn 1752
Permability 231
Personality and Cultural Pattern 1569
Personality and Sex 1477
Personality Rorschach Method 1478
Personality Visual Perception 1570
Peter F M Ergebnisse und Fortschritte der Antimontherapie 1149
Petersen W F Patient and the Weather 1222
Pharmaceutical Chemistry Quantitative 2093
Pharmacology Introduction to 386
Pharmacology Manual of 1067
Pharmacopoeia and Guide School of Tropical Medicine Calcula 615
Pharynx Les maladies du pharynx 1476
Phenanthrene Chemistry of Natural Products Related to 459
Phillips J Diagnosis and Treatment of Diseases of Liver and Biliary Tract 302
Physical Diagnosis 232
Physical Examination Physical Diagnosis 1569
Physical Therapeutic Methods in Otolaryngology 160
Physical Therapy Die Praxis der physikalischen Therapie 1392
Physical Therapy Précis de physiothérapie clinique 1389
Physicians American Doctors Odyssey 386
Physicians and Medical Care 457
Physicians Doctors on Horseback 1934
Physiological Basis of Medical Practice 230
Physiological Chemistry (McClendon Pettibone) 1070
Physiological Chemistry Einführung in die chemische Physiologie 1751
Physiological Chemistry Laboratory Manual (Wilson) 1068
Physiology Aids to 2093
Physiology Chemical Essentials 1390
Physiology Experimental 615
Physiology Human 458
Physiology in Health and Disease 75
Physiology (Barnes) Laboratory Manual 1752, Textbook 2165
Physiology Physiologie du système lymphatique 1933
Pillet E Analyse physique des calculs urinaux et biliaires 2092
Pincussen L Mikrometodik 1572
Piso Willem Opuscula selecta Neerlandicorum de arte medica 1225
Pittsburgh Diagnostic Clinic Clinical Reviews 1069
Pituitary Studien über das Zusammenspiel von Hypophysen- und Ovarialhormonen 1752
Plant J S Personality and Cultural Pattern 1569
Plesch J Physiology and Pathology of Heart and Blood Vessels 1225
Pneumokonioses (Silicosis) 2093
Poetry Dust of Our Time 533
Poetry Immortal Names and Other Poems 1933
Poisons Potions and Profits 1664
Pollomyelitis Infantile Paralysis Methods Used for Restoration of Function 2092
Pollomyelitis Technique of Underwater Gymnastics 1226
Pollock H M editor Family Care of Mental Patients 529
Portman J Studies and Investigations into Corpus Luteum Hormone 736
Post Mortem Appearances 1479
Posttracheo O Lacerat diabeta 1150
Posture Interprétation du fonctionnement du système nerveux 1477
Potter E S Serpents in Symbolism Art and Medicine 75
Poulton E P Taylor's Practice of Medicine 1302
Power D A British Masters of Medicine 459
Practitioners Library of Medicine and Surgery 75
Pregnancy Maladies des femmes enceintes 1572
Pregnancy Manual des Care 1301
Price F W editor Textbook of Practice of Medicine 2164
Priestley J G Human Physiology 458
Prognosis 459
Prostitution 737
Psittacosis Laboratory Diagnosis 1069
Psychiatric Social Service in a Children's Hospital 1149
Psychiatry Family Care of Mental Patients 529
Psychology Guiding Your Life 1388
Psychology Modern Discoveries 531
Psychology Modern in Practice 1841
Psychology of Art 1389
Psychology Practical for Nurses 1477
Psychology Studies in General Psychology 1390
Psychology Studies in Sibling Rivalry 980
Psychology Visual Perception 1570
Public Speaking Going to Make a Speech? 532
Public Welfare Report of the Subcommittee on Health and Disability of the Citizens Committee Wisconsin 614
Punkte Duany N El grupo indeterminado de las afecciones malignas de los ganglios linfáticos 1479
Puerperium Le chirurgien devant l'état puerpéral 158
Raab E Kurzweiltherapie in der Praxis 817
Radio advertising Poisons Potions and Profits 1664
Radium Curie therapy in dermatologia 2014
Radium Medical Uses of 734
Radium Physical Aspects 1842
Radium Radiumdosimetry 1305
Radon Emanotherapy 1840
Radon Therapy Physical Aspects 1842
Rambert P A Le principe antipernicieux de l'estomac 613
Ravina A Lannée thérapeutique 737
Reading Problems in Children 302
Rectum Synopsis of Ano Rectal Diseases 736
Red Cross American Life Saving and Water Safety 818
Religion Exploration of Inner World 530
Renard G La migraine ophthalmique 1069
Respiration Funktionsprüfung der Atmung 1392
Respiratory Exercises Cure of High Blood Pressure by 530
Respiratory Tract Der einfache Schleimhautkatarrh der oberen Luftwege 1150
Respiratory Tract Studies on Bacterial Flora of 898
Reynhera S A editor Tuberkulose legkikh i javleniyahronkhalnoy prokhdimosti 1752
Rheumatism Charterhouse Clinic 2092
Ribeiro E B Estudos cirurgicos 613
Richardson F H Feeding Our Children 1150
Richter H Die akute Mittelohrentzündung 1664
Rienhoff W Sr Principles and Folios of Cancer Research 1395
Risak E Der klinische Blick 818
Rochester N Y History of Medicine 532
Roddie L H William Withering 303
Roentgen Rays Development of Cardiac Enlargement 1750
Roentgen Rays Digestive Tract 383
Roentgen Rays Lehrbuch der röntgenologischen Differentialdiagnostik der Erkrankungen der Bauchorgane 817
Roentgen Rays Manual of Radiological Diagnosis 160
Roentgen Rays Over het elimineren van darmgassen storend voor de röntgenologisch 1151
Roentgen Rays Tomographische Diagnostik der tuberkulösen Kaverne 1479
Roentgenology Clinical of Cardiovascular System 74
Roentgenology Diagnostic Textbook of 2092
Roesser H Clinical Roentgenology of Cardiovascular System 74
Rolleston J D History of Acute Exanthemata 75
Rongy A J Childbirth Yesterday and Today 982
Rorschach Method Introduction to 1478
Rosanoff A J Etiology of Mental Deficiency 1478
Rosenbluth A Autonomie Neuro Effector Systems 1392
Rosenwald Fund Concept of Social Medicine Germany 1779 1932 615
Ross J A Common Neuroses 1572
Ross J M Post Mortem Appearances 1479
Rouvière H Physiologie du système lymphatique 1933
Rowe A H Clinical Allergy 384
Rowlands R P Operations of Surgery 532
Roxburgh C A Common Skin Diseases 1148
Ruckmick C A editor Studies in General Psychology 1390
Rudolph J A Allergy 1571
Ruediger E H Specificity of Wassermann Test in Syphilis 1934
Russell Sage Foundation Physicians and Medical Care 457
Russian Medicine 1932
Safety Accidents and Their Prevention 457
Salmonsens E M Pneumokonioses (Silicosis) 2093
Salzmann J A Principles and Practice of Public Health Dentistry 1663
Saphir O Autopsy Diagnosis and Technique 459
Savill T D System of Clinical Medicine 158
Saxl N T Pediatric Diets 1148
Scalpel and Sword 160
Schindler R Gastroscopy 1569
Schmidt H Ergebnisse und Fortschritte der Antimontherapie 1149

Book Notices—Continued

- School Health Problems 613
Schudel L Leitfaden der Blutmorphologie 459
Schulten H Die Sternpunkt als diag-
nostische Methode 230
Science Museum of London Report of Advisory
Council 1843
Scott G L Morphine Habit 302
Seamen a Handbook for Shore Leave 1664
Serpents in Symbolism Art and Medicine 75
Sex and Personality 1477
Sex Das Geschlechtsleben 531
Sex Encyclopaedia of Sexual Knowledge 532
Sex History of Modern Morals 158
Sex Instruction for Girls 1832
Sexual Power 816
Shands A R Jr Handbook of Orthopaedic
Surgery 386
Shepherd F Sex Instruction for Girls 1932
Sherman H C Chemistry of Food and Nutri-
tion 531
Shields C Hay Fever Treatment by Intra-
nasal Ionization 230
Short A R editor International Medical An-
nual 900
Shtlag Rivalry Studies in 980
Simpson S I Medical Diagnosis 615
Sinclair J G Anatomy of Fetal Pig 817
Sindoni A M Jr Diabetes 982
Skin Curetaria in dermatologia 2014
Skin Diseases Common 1148
Skin Hautdesinfektionsprobleme 899
Skin Maladies des femmes enceintes 1572
Sleep Characteristics 1932
Sloot J P Der tuberkulose Primarkomplex im
Röntgenbilde 1302
Smallman A B Cancer Radio Therapeutic
Departments in General Hospitals 1390
Smallpox Brief Rule to Guide the Common
People of New England 1677/8 1934
Smith N R Elements of Orthopaedic Surgery
1664
Social Hygiene Investigation into Questions of
1571
Social Medicine Concept Germany 1779 1932
615
Social Science Research Council Research
Memorandum on the Depression 2163
Social Service Psychiatric in Bobs Roberts
Memorial Hospital for Children 1149
Soeharto R Over zuveren in maag en duo-
denum bij Inheemschen en Chineezen in
Nederlandsch Indië 1150
Solomons B Tweedys Practical Obstetrics
1571
Spasm Les spasmes de la face et leur traite-
ment 818
Spectacle of a Man 2164
Speech Going to Make a Speech? 532
Speech in Deaf Children 1148
Speech Problems in Children 302
Speech Your Everyday Speech 160
Splders Le venin des araignees 815
Splers H W Brief Outline of Modern Treat-
ment of Fractures 979
Spina blinda Etudes sur le spina blinda 532
Spine La spondylolyse et ses consequences
1223
Spine of Dog 615
Stephens J W V Blackwater Fever 1751
Sterilization Eugenical 458
Stern E A Culture des tissus et cancer 1391
Sternpunkt als diagnostische Methode 230
Stomach Diagnosis and Treatment of Diseases
of 736
Stomach Die Gastroskopie 1751
Stomach Gastroscopy Endoscopic Study of
Gastric Pathology 1569
Stomach Le principe antipernicieux de l'esto-
mac 613
Stone C T Sexual Power 816
Strabismus Practical Orthoptics 458
Stubbe H Spontane und strahleninduzierte
Mutabilität 1662
Stumpf P Zehn Vorlesungen über Kymo-
graphie 1392
Sure B Little Things in Life 457
Surgeon Globe Trotting 615
Surgery Allgemeine Chirurgie 1068
Surgery Chirurgische Indikationen 1664
Surgery Diabete et chirurgie 2163
Surgery Estudios cirurgicos 613
Surgery for Dental Students 1392
Surgery La chirurgie de la douleur 1932
Surgery Les methodes chirurgicales du traite-
ment de l'angine de poitrine 1753
Surgery Manual of Operating Room Procedures
736
Surgery of war Cirugia reparadora do las
lesiones de los nervios perifericos 74
Surgery Operations 532
Surgery Operative Surgery 304
Surgery Practitioners Library 75
Surgery Preoperative and Postoperative Treat-
ment 1751
Surgery Quelques verités premières (ou sol di-
sant telles) en chirurgie abdominale 2163
Surgery Quelques verités premières (ou sol di-
sant telles) en chirurgie infantile 529
Surgery Traité de chirurgie orthopédique 232
Surgical Anatomy 982
Surgical Nursing Textbook of 2165
Surgical Pathology of Thyroid Gland 900
Surgical Treatment 1304
Sutton D C Physical Diagnosis 1569
Svensson R Studies on Human Intestinal Pro-
tozoa 1390
Sweden Investigation into Questions of Social
Hygiene 1571
Syphilis Lehrbuch und Atlas der Haut und
Geschlechtskrankheiten 982
Syphilis Specificity of Wassermann Test 1934
Syphilis Who Gave the World Syphilis? Haitian
Myth 157
Take Care of Yourself 532
Tanner F W Bacteriology 1661
Tax Supported Medical Care 815
Taylor's Practice of Medicine 1302
Tchaperoff I C C Manual of Radiological
Diagnosis 160
Ten Rhine Wilhelm Opuscula selecta Neer-
landicorum de arte medica 1225
Terman L M Sex and Personality 1477
Terminology Die Nomina anatomica 816
Terminology Medical Greek and Latin at a
Glance 159
Teschendorf W Lehrbuch der roentgenologi-
schen Differentialdiagnostik der Erkran-
kungen der Bauchorgane 817
Testa Os hormonos testiculares 1663
Thacher T Brief Rule to Guide the Common
People of New England in the Small
Pocks or Measles 1677/8 1934
Therapeutics Introduction to 386
Therapeutics L'annee thérapeutique 737
Therapeutics Ocular Handbook of 531
Thiel R Atlas der Augenkrankheiten 160
Thomas P Manuel de blocfime 897
Thomson St C Diseases of the Nose and
Throat 1572
Thost A Der einfache Schleimhautkatarth der
oberen Luftwege und seine Behandlung
1150
Throat Diseases of (Hall) 900
Throat Diseases of (Thomson) 1572
Thyroid and Its Diseases 456
Thyroid Gland Surgical Pathology 900
Thyroideomie totale dans le traitement de
l'insuffisance cardiaque et de l'angine de
poitrine 1149
Tidy H L editor International Medical An-
nual 900
Tirala L G Cure of High Blood Pressure by
Respiratory Exercises 530
Tissue Culture des tissus et cancer 1391
Tissues Living Metabolism of 615
Titus P Management of Obstetric Difficulties
2163
To Drink or Not to Drink 1752
Tobey James A Federal and State Control of
Milk Prices 459
Toe Casting and Liquid Rubber Technic 981
Toe A Diseases of Newborn 457
Trauma and Disease 1224
Travel Globe Trotting with a Surgeon (A H
Peacock) 615
Travel Seamen a Handbook for Shore Leave
1664
Troncoso M U Internal Diseases of the Eye
and Atlas of Ophthalmoscopy 231
Tropical Diseases Pharmacopoeia and Guide
615
Tropical Medicine Precls de médecine coloniale
1934
Tuberculosis Anleitung zur Konstitutionsdiag-
nostik bei kindlicher Tuberkulose 1391
Tuberculosis Atelektasen bei kaverner Lungen
tuberkulose 1479
Tuberculosis Chronic Miliary 1842
Tuberculosis Control of in England Past and
Present 1841
Tuberculosis Der tuberkulose Primarkomplex
im Röntgenbilde 1302
Tuberculosis Die Entwicklung der Lungentu-
berkulose des Erwachsenen 1479
Tuberculosis Die klimatische Behandlung der
Tuberkulose und ihre heutige Bewertung
1389
Tuberculosis Le bacille de type bovin dans la
tuberculose humaine 1570
Tuberculosis L'infection bacillaire et la tuber-
culose vaccination preventive (Calmette)
736
Tuberculosis Lungentuberkulose in Verbindung
mit anderen Erkrankungen 1934
Tuberculosis pulmonary Tomographische Diag-
nostik der tuberkulösen Kaverne 1479
Tuberculosis pulmonary Tuberkulose legkh
bronkhialnoy probodimosti 1752
Tuft L Clinical Allergy 1750
Tweedys Practical Obstetrics 1571
Twins Etiology of Mental Deficiency 1478
Typhoid Négie Undersigelser over Widalreak-
tionen 818
Ultraviolet Radiation Measurements in Ameri-
can Cities 1572
University of Glasgow Clinical Laboratory
Methods 1151
Until O Anestesia de base pela dialilmalonil
urea 1303
Urinary Tract calculi Analyse physique 2092
Urine Mikromethodik 1572
Urology Medical 1303
Urology Quelques verités premières (ou sot
disant telles) en urologie 1478
Uterus Atlas gisteroskopil v akusherstre 304
Uterus Les hémorrhagies uterines avant et
après la menopause 74
Valzei M Chronic Miliary Tuberculosis 181
Vallery Radot P La anapylaxie 1840
van Bogaert L Une forme cérébrale de la
cholesterinose généralisée 2014
van der Burg L W Over het elimineeren van
darmgassen storend voor de roatgading
nostiek 1151
Varicose Veins, Le varicel 386
Vellard J Le venin des araignees 815
Venereal Diseases Practical Methods in Diag-
nosis and Treatment 2014
Ventilation Modern Principles 1068
Vernon H M Accidents and Their Prevention
457
Vernon M D Visual Perception 1570
Vignes H, Maladies des femmes enceintes 1572
Virus Research Use of Developing Egg 1381
Viruses Filterable Laboratory Outline in 303
Vision Deficiency of A Vitamina and Visual
Dysaptation 73
Visual Perception 1570
Vitamin A Deficiency of A Vitamin and Visual
Dysaptation 73
Vitamin Antianemias 158
Vitamin in Theory and Practice (Harris) 531
Vitamin Little Things in Life 457
Vitamin Minerals and Hormones 231
Wahlia B Das Retzelektungsstystem und die
Nerven des Saugelcherzens 1224
War Cirugia reparadora de las lesiones de los
nervios perifericos 74
Warbasse J P Surgical Treatment 1304
Warembourg H Les hyperglycemies 1304
Wassermann Test Specificity in Syphilis 1931
Water Safety and Life Saving 818
Water Technique of Underwater Exercises
1226
Weather Patent and the Weather 1222
Weber A Tableau de la caricature médicale
76
Welch W H Adaptation in Pathological Proc-
esses (1897) 1934
Welders Health Protection of 614
Werner A A Endocrinology 1661
Wernge T B Diagnostics of Iala 615
White P D Heart Disease 304
White R C Research Memorandum on Social
Aspects of Relief Policies in the Depression
2163
Wiggers C J Physiology in Health and Dis-
ease 75
Williamson B Handbook on Diseases of Child-
ren 1150
Wilson D W Laboratory Manual of Physio-
logical Chemistry 1068
Wiprud T Business Side of Medical Practice
1479
Wisconsin Report of Subcommittee on Health
and Disability 614
Withering William Introduction of Digittals
303
Wokes F Textbook of Applied Biochemistry
1571
Wolf P Über einige neue Arzneimittel 980
Women Intimate Side of Woman's Life 614
Wood H C Jr and others Dispensary 108
Woolf W H Toe Casting and Liquid Rubber
Technic 981
Wounds Wundheilung 981
Writing Problems in Children 302
Your Everyday Speech 160
Zahorsky J Pediatric Nursing 204
Zaborsky J Synopsis of Pediatrics 1069
Zielek K Lehrbuch und Atlas der Haut und
Geschlechtskrankheiten 982
Zimmer K G Radiumdosimetrie 1305

C

- C C C See Civilian Conservation Corps
CABOT HUGH 956—E 1280—E
CACHEXIA See Pilitary
CADAVER Blood See Blood Transfusioa
skin reaction to radium and roentgen rays
[Paltinler] 319—ab
CAFFEINE See also Coffee
Ampones Caffeine with Sodium Benzozate
2 cc 875
pharmacodynamic action [Martinet] 39,
—ab
Treatment See Angina Pectoris
CALAFO Liquid 1060—B1
CALCANEUM spur (painful) surgical treat-
ment [Spitz] 320—ab
CALCIFICATION See Placenta Spleen Thorax
CALCIUM and blood coagulation 1818—F
Carbonate Treatment See Sinuses Nasal
chloride accidental perivascular injection
control effects 895
Chloride Treatment See Embolism pulmo-
nary
deposits in tissues 2011
effect on gastric secretion [Celia] 1491—ab
effect on ossification 435—F
Gluconate (N & R) 2069
Gluconate Treatment See Anemia secondary
in Blood See Blood
in egg shells 71
Intestinal flora and 1678—F
levels in lake paralysis 70
metabolism controlling [Aub] *1278

CALCIUM—Continued
phosphorus ratio of diet, effect on degree of rickets produced 30
plaque formation in kidney papilla [Randall & others] *1608
tolerance curves in Paget's disease, [London] 1853—ab
Treatment See also Anemia Chorea nilior
Eclampsia Embolism pulmonary Purpura haemorrhagica Sinus Nasal
treatment (oral) simple method [Fillion] 212—ab
tricalcium phosphato to remove fluoride from water [Elvovc] 1581—ab
use and choice of a calcium salt [Aub] *126
use in pregnancy to prevent caries (reply) [Gordon] 733
value of spinach and tomatoes compared [Tisdall] 1760—ab (spinach only Council report) 1907
CALCULI See Gallbladder Urinary Tract
CALLUS on feet radium for blisters resulting 1064
CALOMEL See Mercury mercurous chloride
CALSO Water 1060—BI
CALUMET Herb Tea 2005—BI
CAMPFOR synthetic added to Italian pharma copela 2152
Treatment See Dementia Praecox
CAMPS isolated concentrated milk and vitamin C for 66
CANADA cleans up radio 1546—E
experience with zinc sulfate sprays 2072—E
CANADIAN MEDICAL ASSOCIATION See also Index to Organization Section
meeting 367 (officers elected) 596
CANCER See also Adenocarcinoma Chorion epithelioma Epithelioma Tumors malignant under names of specific organs
Medicolegal Abstracts at end of letter M
Besredka's vaccination 60
blood in specific properties [Aron] 1675—ab
blood sugar in 1467
cells macronucleus of [MacCarty] 1667
—ab
chalc (Pstrick Hall Indiana) 798 (Emory U Georgia) 880
commission (New York) 439 (Missouri) 1285
control cancer week in Passaic County N J 1550
control Central Oncologic Scientific Institute USSR 60
control \$10,000,000 given to Yale 51
diagnosis (biologic) with urinary extract 599
diagnosis nlahydrin reaction [Weiss] 1944—ab
diffuse symptomatic steatorrhea in [Lunds tean] 834—ab
exhibit program New York 1821
forum Philadelphia 1915
heredity vs occurrence [Slre] 1940—ab
hospital (Memorial Hospital N Y) 513 (Missouri) 365
in children urogenital tract [Campbell] *1606
in U S Navy from skin irritation [Peller] 1486—ab
Industrial lesions and 2152
Leningrad Institute of 60
metastasis by blood stream [Patey] 314—ab
metastasis causing pathologic fractures [Ghormley & others] *2111
metastasis (distant) and aspiration biopsy [McLean] 1579—ab
mortality rate 380 (reducing) [Skinner] 1910—ab
National Advisory Cancer Council formed 434—E 1287
National Cancer Institute 434—E 883
nostrum Baker (Norman) 375—BI 798
nostrum Byars axle grease 364
nostrum Cooper (W W) enjoined 1914
pala subarachnoid alcohol injection [Peylon] 1073—ab (palliative treatment) 2088
precancerous Bowen's disease 2153
precancerous cervix [Strachan] 1584—ab
prize Cleveland Medical 1371 (Ho H R Luce of Time Inc) 1644
problem Germany 724
prognosis sedimentation reaction [Jacoby] 1169—ab
research (consultants at Columbia) 139 (status) 145 601 (Donner gives funds for) 1644 (Patterson Institute for) 1993 (new viewpoint) [Hagedorn] 2026—ab (bequest for Omaha) 2075
Society of Rosario Argentina organized 1646
statistics in large cities of world 1223
tar vitamins inhibits? [Davidson] 2169—ab
tarred road dust and [Campbell] 624—ab
Treatment Roentgen See also Uterus cancer
treatment roentgen after removal of basal cell cancer 1659
treatment roentgen Coutard's method [Chamberlain] 1235—ab
treatment roentgen postoperatively [Wintz] 99—ab
treatment roentgen sickness congo red for 1633
Irlie primary in otolaryngology [Drooker] *1180
urine in specific properties [Aron] 1675—ab

CANCER—Continued
vascular parabiosis and sex hormones [Mur ray] 003—ab
Wassermann reaction positive in 609
CANDY Worm Expeller 1925—BI
CANNABIS See Index to Organization Section
CANNED Food See Food
CAPILLARIES circulation histamine test 1297
permeability vs vitamin P Szenl Gyorgyi's research 1912—E 2154
rupturability 1054
CAPILLAROSCOPY of venereal lesions [Nico las] 1764—ab
CAPSICUM Salve 1653—BI
CAPSULE ordinary or enteric coated glandular products 074
CAR See Automobiles
CARBARSONE N N R dosage forms 209
Treatment See Trichomonas vaginalis
CARBOHYDRATES See also Dextrose Lactose (cross reference) Sugar
deficiency role in cardiovascular disorder [Weiss & Wilkins] *787
limitation in migraine treatment [Porges] 320—ab
metabolism 1820 (vitamin relationship) [Schroder] 2109—ab (anterior pituitary extract effect on) [Lassen] 2110—ab
protein change to 2072—E
Tolerance See Diabetes Mellitus
CARBON 2085—BI
CARBOLIC ACID See Phenol
CARBON See Acid carbonic Charcoal
Arc See Ultraviolet Rays
CARBON DIOXIDE atmosphere (10%) ap paratus to produce [Gould & Huddleson] *1073
mine gases and their effects 975
N N R 1365
relation to artificial respiration [Johnson] 2103—ab
CARBON DISULFIDE effects of alcohol on workers with 1472
Industrial hazard [McConnell] *764
CARBON MONOXIDE poisoning (chronic) in 5 gas works employees 722
CARBON TETRACHLORIDE Industrial hazard [McConnell] *763 (Shell's Kleenzit) 1658
poisoning 1144
CARBOSALVE 1653—BI
CARCINOMA See Cancer
CARDIOLYSIS See Pick's Syndrome
CARDIOVASCULAR DISEASE in beriberi [Weiss] 986—ab
in nutritional deficiency [Weiss & Wilkins] *786
Institute on Cincinnati 1286
syncope result of [Herrmann] 907—ab
syphilis [Paulin] *1123
syphilitic patients with symptoms of [Can non] *351
treatment theobromine calcium gluconate [Ziskin] 906—ab
vitamin B₁₂ in [Weiss & Wilkins] *788 [Jones] 825—ab
CARDITIS See Heart Inflammation
CARIES See Teeth
CAROTENE in Blood See Blood
utilization of vitamin A and 1045—E (effect of mineral oil on Council report) 1814
CAROTID SINUS diathermy of in arterial hypertension [Gorlero Pizarro] 1162—ab
postoperative cerebral vascular shock [Frisch] 2109—ab
CARR MARTIN diabetes fraud 225—BI
CARRIERS See Paratyphoid Typhoid
CARS See Automobiles
CARTILAGE skeletal diseases 1829
CASE Finding Work See Tuberculosis
record patients [Hurwitz] 1561—C
CAST plaster metal channels facilitate removal [Prosperi] *1448
plaster shells in infantile paralysis [Bennett & others] *1120
CASTRATION theelin in oil dosage after [Werner & others] *1027
tuberculous infection and [Schedtler] 914—ab
CATARACT traumatic compensation in 894
treatment surgical 147
vacuoles in lens a form of 1744
CATARRAH Oravax Merrell 1130—E
CATGUT letanus prevention 1288
CATHARTICS phenolphthalein toxicity [Soper] 294—C
CATTLE Tuberculosis in See Tuberculosis
bovine
CAUDA EQUINA syndromes low leptomeningi tides in [Devic] 2172—ab
CAUSALIN (Causith) 506
CAUSYTH See Causalin
CAVERNOUS SINUS See Thrombosis sinus
CEBIONE N N R 359
CECONI ANGELO death 62
CECUM congenital undescended [Jordan] 2022—ab
diverticulitis spasm adenocarcinoma adhesions etc [Pischardt & Rafsky] *2048
CEDAR poisoning predispose to pneumonia? 1744
CELERY craving for 1566
CELIAC PLEXUS stimulation inaugurates circulatory disorders [Bursteln] 1313—ab

CELLOSOLVE Industrial hazard [McConnell] *765
CELLS See also Cancer
Basal Cell See Cancer treatment
Blood See Blood Erythrocytes Leukocytes
glant characteristic preceding measles 1047—E
Granulosa See Ovary tumors
International Congress for Experimental Cytology (fifth) 1917
microscopic representation of surfaces of living organs [Singer] 226—C
Pyramidal See Mastoid
CELLULITIS of neck requiring tracheotomy [New] 1672—ab
CELLULOID combs ignite burns from [Fox] *1978
CELLULOSE acetate plaster shells [Bennett & others] *1120
CENSUS headed for last one? 1638—E 1726—E
CENTRAL Association of Obstetricians and Gynecologists (prize) 1641 (meeting) 1645
CEREALS alleged decalcifying effects Council report 30
Cerevim 31
Larsen's Freshlike Strained 433
Lifestaff Natural Grain Porridge 1637
Meal 1060—BI
CEREBELLUM atrophy primary 1054
CEREBROSPINAL FLUID lymphocytic chorio meningitis [Dominick] *247
polypeptides in dementia paralytica [Claude] 1237—ab
Pressure See also Intracranial Pressure
pressure and subcutaneous tumors [Bedford] 1080—ab
protein [Phillips] 1318—ab
CEREBROSPINAL MENINGITIS See Meningitis
CEREBROSPINAL SYPHILIS See Neurosyphilis
CEREBRUM See Brain
CERIVIM 31
CERVICITIS See Uterus
CESAREAN SECTION Tsmarch's bandage for expelling blood in [Holzbach] 1085—ab
CHAGAS Disease See Trypanosomiasis
CHALGONIA Tablets 1741—BI
CHALKS colored lead in hazard for children [Jephcott] 1488—ab
CHALLENGER Brand Evaporated Milk 1127
CHAMBERLAIN'S Salve 1925—BI
CHANCROID capillaroscopy [Nicolae] 1764—ab
diagnosis Ducrey vaccine [Dulaney] 2098—ab
CHAPPEL Liver Extract (Subcutaneous) 10 cc 1365
CHARCOAL intravenously [Van Meeteren] 998—ab
CHARCOTS Joints See Tabes Dorsalis
CHEMICAL Foundation See Foundations
CHEMISTRY Brazilian Congress of (second) 148
CHENEY'S Compound Herbs 1653—BI
CHERRIES Sexton Brand 31
CHEST See Thorax
CHIASMA Syndrome See Nerves optic
CHICAGO Medical Society (approves campaign on syphilis) 592
Tumor Institute—Coutard and Cheatle come to Chicago 1450
CHICKENPOX relation to herpes zoster [Stern] 747—ab
CHICKENS paralytic infection relation to poliomyelitis 144
sex of chicks be changed? 1659
CHIGGERS See Trombidiosis
CHILD BIRTH See Labor
CHILDREN See also Adolescence Girls in
fants Pediatrics names of specific diseases as Cancer Rickets Syphilis Tuberculosis
Adoption See Adoption
Child Neurology Research of Friedsam Foundation report 140
Children's Aid Society wards undergo syphilis tests Illinois 363
Children's Bureau See also Index to Organization Section
Children's Bureau (E F Daily new division director) 217 (positions with) 1917
Crippled See Crippled
Handicapped See Handicapped
Institute on Exceptional Child 1372
preschool health [Henderson] 909—ab
punishment (flogging) 598 1137
school alcoholism in 1827
school danger from lead in colored chalks [Jephcott] 1488—ab
school diet for 1136
school hearing tests [Newhart] *839
school nutrition of [McLester] *838
school physical examination [Rogers] *842
slowness in 154
Stuttering See Speech disorders
welfare (centers) Italy 519
welfare International Congress for Protection of Children 291 1136
welfare Social Security Act grants 879—F
CHINESE 40 days constipation in [McCandless] 150—C

- CHINESE-JAPANESE WAR, British mission-
ary hospitals service to wounded 1288
zone cholera in 1951 2142-E
- CHIROPRACTOR suspended sentence 214
- CHLORIDES See Ammonium chloride Calcium
chloride Sodium chloride etc
- CHLORINATED hydrocarbons Industrial haz-
ard [McConnell] *763
- CHLORINE See also Medicolegal Abstracts at
end of letter M
sterility in pulp workers from 378
toxicity of Halowax and chlorinated naphtha-
lenes 1386
- CHLOR-ISO - OCTYL - RESORCINOL Disin-
fectant I 1368-E
- dichloro - DI - FLUOROMETHANE (Freon),
used in air conditioning toxicity of 1567
- tetrachloroethane Industrial hazard [Mc-
Connell] *763
- dichloro ETHYL SULFIDE (mustard gas)
consuming food contaminated with 1291
late effect on eye of war injury 516
- dichloroETHYLENE Industrial hazard [Mc-
Connell] *763
- tetrachloroETHYLENE Industrial hazard
[McConnell] *763
- Treatment See Oxyuriasis
- trichloroETHYLENE Industrial hazard
[McConnell] *763
- toxicity 810
- CHOANA congenital occlusion [Anderson]
*1788
- CHOC-LADE (Dairy Drink Powder) 277,
(Chocolate Flavored Drink) 1455
- CHOCOLATE flavor Kligco, 587
- CHOLANGITIS See Bile Ducts Inflammation
- CHOLAX Band Pulvis Effervescent Salts Phos-
phatis Comp (Kelvan), 1832-B1
- CHOLECYSTECTOMY See Gallbladder
- CHOLECYSTOGRAPHY See Gallbladder, roent-
gen study
- CHOLERA in China 720 (Seven Who Fled)
957-E 1051 2142-E
vibrio in water tartaric acid destroys
[Vielle] 1587-ah
- CHOLESTEROL cause of atherosclerosis
[Leary] 1382-C
- in Blood See Blood
- in erythrocytes in pernicious anemia 434-E
- metabolism in glycogen storage disease
[Beumer] 750-ab
- metabolism in multiple sclerosis [Frisch]
177-ab
- quantitative variations in gallbladder wall
371
- CHOLINE Treatment See Myasthenia gravis
- CHOREA acute procaine hydrochloride block
for [Zalkan] 544-ab
- clinical study [Chang] 627-ab
- minor calcium acetylsalicylic acid for [Pear-
son] 80-ab
- treatment fever Kettering hypertherm [Bnr-
nacle & others] *111 [Kendell] 2020-ab
- virus role in rheumatic diseases [Eagles]
1585-ah
- CHORIOMENINGITIS lymphocytic [Dominick]
*247 (virus) [Armstrong & Wooley] *410
- CHORIONEPITHELIOMA diagnosis syncytial
reaction of pregnancy [Cholsser & Notes]
*1628
- in males [Bankoff] 832-ab
- CHOROID cancer radon for [Evans] 1583-ab
- CHRISTIAN-WEBER Disease See Pannicu-
litis
- CHROME green toxicity 813
- CHROMIUM plating disease from 1922
- CHRONAXIA See Nerves Muscles
- CHYLE Injection See Chylithorax
- CHYLOTHORAX superior vena cava ligation
and [Robinson] 1577-ab
- traumatic aspirated chyle Intravenously for
[Bauersfeld] *16
- CHYME tissues defense against in peptic ulcer
[Carlson] 312-ab
- CICATRIX ectropion correction, 2160
- CIGARET See Tobacco
- CINCHOPHEN jaundice [Boros] *113
- toxic drugs [Soper] 294-C
- CIRCULATION See Blood
- CIRRHOSSIS See Liver
- CITADEL Cronin's 956-E
- CIVIL SERVICE See United States
- CIVILIAN Conservation Corps physicians want-
ed for 1917
- CLAMS prohibit sale Calif 1369
- CLAUDICATION intermittent in arterioscle-
rosis [Veal] 1845-ah
- CLAVICLE fractures old ununited [Berke-
heller] 313-ab
- CLEVELAND Exposition health exhibit 215
- CLIFTON S Brazilian Herbs 1060-B1
- CLIMACTERIC See also Menopause
male is there any? 977
- CLIMATE See also Arctic Seasons Weather
American Clinical and Climatological Asso-
ciation 1135
- in arthritis 1143
- in pulmonary tuberculosis 1298
- in relation to coronary thrombosis [Rosabn]
1294-C [Waster] 2157-C
- in relation to general health and specific
diseases 34-E
- CLIMATE-Continued
Society of Hydrology and Medical Climatology,
219
- subtropical transporting rheumatic fever
patients to [Jones] 1308-nh
- tropical acclimatization to, Italians in
Africa 62
- CLINIC See Cancer Dental Encephalitis,
Fractures Handicapped Pneumonia Rheu-
matism etc
- CLINICAL Laboratory See Laboratories
- Orthopedic Society silver jubilee 1051
- research Medical Research Council promotes,
441
- teaching clinic hospital university agreement
Rome 1378
- CLINICIAN and serologic test for syphilis
134-E [Wiener] 294-C
- CLIX Shortening 1043
- CLORAL Hair Dye, dermatitis from 2009
- CLOTHING court claims for dermatitis pro-
duced by 286
- COBEFRIN chemical formula *2065
- COBRA Venom Treatment See Arthritis
- Paralysis aglans
- COCAINE solution sterilization preservation
977
- COCCIDIOIDES valley fever' caused by
[Dickson] 66-C 1757-ab
- COCCYODYNIA relief by massage [Thiele]
*1271
- COCCY painful [Duncan] 309-ab
- COD LIVER OIL Concentrate Tablets Merrell
209
- dosage for infants and adults, Council recom-
mendation 507
- to prevent dental caries in pregnancy (reply)
[Gordon] 733
- Treatment See Ulcers Wounds
- COELOTHELIOMA, epicardiac, [Andolf] 998
-ab
- COFFEE See also Caffeine
decaffeinated in gastric diet [Bernay] 1942
-ah
- effect on alcohol in blood [Koopmann] 243
-ab
- effect on basal metabolism 1466
- COFFMAN H J See Index to Organization
Section
- COITUS delayed or absent orgasm 1473
- period of potency in man 891
- tuberculous epididymitis and 977
- COLCHICINE effect on blood coagulation
[Loisel] 1493-nh
- COLD See also Arctic Freezing
effect in multiple sclerosis [Simons] 1400
-ab
- Pressor Test See Blood Pressure
- COLDS See also Medicolegal Abstracts at
end of letter M
- host susceptibility to [Spiesman] 1575-ab
- masks and isolation 1386
- nostrum Pilsa 449-B1
- prevention oral vaccines Entoral Catarrhal
Oraxay Merrell 208 1130-E [Richer]
1926-C
- prevention vaccines 1217 (Industrial value)
[Bristol] 1848-ab
- treatment linoleic and linolenic acids (vita-
min F) [Boyd] 744-ab
- vaccination results [Houser] 1577-ab
- COLECTOMY See Colon surgery
- COLITIS Amebic See Amebiasis
- diagnostic intradermal reaction with howel
antigen [Paulson & Kravetz] *1880
- liver insufficiency in [Binet] 241-ab
- mucomembranous enterocolitis intestinal tri-
chomoniasis with [De Muro] 1320-ah
- spastic calcium orally in [Fillion] 2172-nh
- ulcerative aluminum hydroxide and kaolin
for [Eyerly & Breunhaus] *191
- ulcerative chronic thrombophlebitis compli-
cates treatment 1219
- ulcerative control rectal bleeding with ka-
olin liquid petrolatum and aluminum
hydroxide [Fradkin] 464-ab
- ulcerative fever therapy [Ferguson] 2017
-ab
- COLLAPSE THERAPY See Pneumothorax
- Artificial Tuberculosis Pulmonary
- COLLEGE See University
- Graduates See Graduates
- Medical See Schools Medical
- Students See Students
- COLLENS Wensky Intermittent Venous Oc-
clusion Apparatus 131 *2125
- COLLES Fracture See Radius
- COLLINS Oxydo Open Top Oxygen Tent 793
- COLLOIDION substitute latex [Narat] *655
- COLON RICARDO death 2002
- COLON See also Colitis
- atonic effect of mecholyl [Myerson] 239-ab
- cancer 69
- cancer of transversed colon masked forms
[Cade] 1237-ab
- diverticulitis and diverticulosis [Brown &
Nareley] *1328, (relation to cancer)
*1330 (Incidence) [Kocour] 1397-ab
- endometriosis [Cnente] 745-ah
- irritable vs chronic cholecystitis [Wilkin-
son] *1012
- megacolon Hirschsprung's disease [Bate]
1939-ab
- COLON-Continued
megacolon with megaloureter [Hepler]
*1602
- surgery colectomy or excision with ile-
ostomy [Whittaker] 84-ab
- surgery colectomy (right) for malignancies
mortality [Allen] *923
- COLON BACILLUS See Bacteria
- COLONIAL Flour 277
- Medicine See Medicine colonial
- COLOR testing sensitivity of eye to especially
street lights 442
- vegetable coloring matter, action on skin
1838
- COLOR BLINDNESS heredity 455
- tests 1136
- COLORADO Medicine See Journals
- COLORIMETER Photo Electric See Blood
carotene
- COLUCCI CESARE 1378
- COLUMBIA UNIVERSITY (consultants on can-
cer research) 139 (grants for medical re-
search) 215 (Frank fellowship) 591
(short graduate courses) 963
- COMA See also Diabetes Mellitus
definition in insulin hypoglycemic therapy
[Brody & Hayman] 1833-C
- COMBS See Celioid
- COMMITTEE of Physicians (self appointed)
proposals on stato medicine 1280-E 1723
-E 1816-E
- on Evaluation of Serological Tests for
Syphilis See American Committee
- COMMONWEALTH Fund See Foundations
- COMMUNICABLE DISEASES See also Infec-
tious Diseases
- control (in actiools) [Ferrell] *835 (in pri-
vate practice) [Stewart & Platou] *1570
- in China [Hsu] 911-ab
- COMPENSATION See Workmen's Compensa-
tion Acts
- of Physicians See Medicolegal Abstracts at
end of letter M
- COMPLEMENT Fixation Test See Amebiasis
- Antihormones Trypanosomiasis Wasser-
mann Test
- COMPOUNDS U S Food and Drug Adminis-
tration to regulate naming 715-E
- CONCEPTION See Fertility
- CONDOL 132
- CONFERENCE See American International
National list of societies at end of letter
S
- on Better Care for Mothers and Babies
U S 1937
- on Health Education for the Public See
Index to Organization Section
- on Rheumatic Diseases See American Rheu-
matism Association
- CONGO RED TEST See Amyloidosis
- Treatment See Anemia Pernicious Cancer
treatment Sprue
- CONJOIN 2005-B1
- CONGRESS See also American International
National list of societies at end of letter S
- Australasian Medical Congress 1555
- of French Alienists and Neurologists (forty
first) 1054
- of German Neurologists and Psychiatrists
2151
- of German Orthopedic Society 1737
- of German Otorhinolaryngologists 804
- of Latin Nations on Otorhinolaryngology, 290
- of Railway Surgeons 964
- of Sport Physicians (first) 1292
- U S Medical Bills in See Legislation
- CONJUNCTIVITIS proteus [Zuccoli] 1370-ab
- treatment quinine locally [Robinson] 990
-ab
- CONSCIOUSNESS sudden loss as cause of
auto accidents 1067
- CONSTIPATION 40 days in Chinese [Mc-
Candless] 150-C (reply year's duration)
[Goodman] 809-C
- prevention bran [Dimock] 240-ab
- CONSTITUTION neuropathic and heredity
committee report 1991-E
- physique (national) England 441
- physique of unemployed young men 136-E
- tuberculin reaction (positive) relation to
[Weisman] *1445
- CONTACT Dermatitis See Dermatitis recocata
- Lenses See Glasses
- CONTAGIOUS DISEASE See Infectious Dis-
eases
- CONTRACEPTION See Birth Control
- CONTRACT See Index to Organization Section
- Practice See Medicine
- CONVALESCENT Serum See Serum
- CONVULSIONS See also Clampsia Epilepsy
after lumbar puncture 1385
- in Infancy 295 1136
- Therapeutic See Dementia Praecox
- COOK COUNTY See Hospitals
- COOKING See also Heat effects
- utensils lead poisoning from [Scin] 2105-ab
- COOLEY S Disease See Anemia erythroblastic
- COOPER W W cancer specialist enjoined
1914
- COPELAND BILL (S 5) See also Index to
Organization Section
- scope 1546-E

- COPPER Morhuato See Tuberculosis Pulmonary treatment
plating nasal septum perforation in [Barshy] 466—ab
Treatment See Diabetes Mellitus
COPRATOPORPHYRIN See Peces
CORNEA See also Keratitis
Immunity Irradiation stimulates, 510—E
ulcer dendritic (in herpes facialis) [Ncme] 624—ab (pituitary solution for) 976
CORNIL LUCIEN dean at Marseilles, 1054
CORN treatment radium blisters resulting 1064
CORONARY Arteries See Arteries
CORONERS to be lawyers or physicians En gland 515
CORPORAL Punishment See Children
CORPORATIONS See Medical Abstracts at end of letter M, Index to Organization Section
CORTZA See Colds
COSMETICS See also Index to Organization Section
A M A Advisory Committee on Advertising of decision on non allergic 1723
Heslo Rublastein invades health field 65 —BI
poisoning from lipsticks etc 2078
vitamins in 509—E
COUGH See also Sputum (cross reference)
Whooping Cough
nostrum Also 449—BI
treatment expectorants [Brown] *268
COUNCIL A M A See American Medical Association
COURT See also Medical Jurisprudence
juvenile great value 1137
COUTARD S Method See Cancer treatment
COUTO MIGUEL monument to 147
COWPOX milkers a vint [Bonnevile] 85—ab outbreak New York 718
COWS See Milk
Tuberculosis in See Tuberculosis bovine
COZZINS New Formula for Asthma, 1653—BI
CRANIAL See also Brain Head Scalp
asymmetry after childbirth 1743
fracture behavior after operation 1650
fracture involving sinuses and mastoids [Coleman] *1613
fracture of base surgery in [Febr] 1766—ab fracture (postmortem) can heat produce 525 bealing in preterminal and flat bones [Roegholt] 398—ab
Injuries classification [Moore] *860
osteoporosis (circumscribed) [Kasabach] 235 —ab
Pressure in See Intracranial Pressure
tumors unusual types [Plicher] 530—ab
CREAM See also Ice Cream Massage
Roller Extract Flour 1455
CREATINE excretion in infancy [Catherwood] 620—ab
CREATININE excretion in infancy [Catherwood] 620—ab
In Blood See Blood
CREMATION progress International Congress 1463
CRESOL drinking in highland anuria from nephrostomy for [Livemore] *1528
orthorh-CRESYL phosphate industrial hazard [McConnell] *764
CRETINISM in London [Lewis] 910—ab
CRIME prevention International Congress on Infantile Psychiatry 1289
CRIMINALS See also Prisons
Austrian insanity laws revised 1465
CRIPPLED See also Handicapped Polymyositis
arthritic surgical reconstruction [Wilson] 1228—ab
children (Nemours Foundation for treatment and care) 281 (survey California) 363 (grants for work under Social Security Act) 879—E (advisory board for Texas) 1016 (aid for Conn.) 2074
CROHN S DISEASE See Ileitis
CRONIN A J THE CITIZEN 956—E
CROSLEY Xerac 1635
CROUP See Pneumonia croupous
CROUZON Professor 1648
CROWLEY WILLIAM B See Index to Organization Section
CRUISE See Pan American
CRYPTORCHIDISM See Testis undescended
CUBE toxicity 1836
CUETO A Crosley Xerac 1635
CULLEN S SIGN See Pancreatitis
CULTS See also Chiropactor Naturopathy Osteopaths
bill to prohibit France 57
CULTURE See also Bacteria Bone Marrow method of viscera in Lindbergh apparatus 1210
CURARINA De Juan Salas Nieto 2156—BI
CURSHING SYNDROME [Mencher] *1238
CUTASS Laboratories Inc Pomay B 7 1142 —BI (correction) 1373 [Reed] 1654—C
CUTIS Verticils Gyrate See Scalp
CYANOSIS acropapular [Stern] 1763—ab from sulfanilamide [Marshall] 1314—ab
CYCLOHEXANOL industrial bazar [McConnelly] *764
CYCLOTRON Comstock prize to inventor 1823
CYSTINE tests in nails 68
CYSTITIS See Bladder inflammation
CYSTOCELE See Bladder
CYSTOMETRY See Bladder
CYSTS See Endometrium Ovary Sebaceous Glands
Air See Lungs cysts
Endometrial See Ligament uterosacral
CYTOLOGY See Cells
CZECHOSLOVAKIA See Index to Organization Section
D
DABON Brushless Modern Shaving Cream 2085 —BI
DACTYLITIS See Fingers
DAIRY Products See Ice Cream Milk
DALAND Foundation See Foundations
Hematocrit See Erythrocytes volume index
DALGININE Capsules 1060—BI
DALLEY S Pain Extractor 1925—BI
DANIELL BAMPFELDE death 61
DARK Adaptation Method See Vitamin A
DAVIES W T F honored 61 1377
DAVIES HINTON Test See Syphilis sero diagnosis
DAVIS J C B slayer sentenced to hang 439
DAYLIGHT See Light
DEAD BODIES See Cadavers Cremation
Death Embalming (cross reference)
DEAFNESS See also Hearing
Commission to study problems of hard of hearing New York 365
complete after electric shock 894
Hearing Aids See Hearing
in early childhood 809
in late prenatal syphilis [Cole] *580
prevention after meningitis [Eagleton] 823 —ab
problems in education [Newhart] *839
treatment vitamin B 1930
DEATH See also Cadavers Cremation
Embalming (cross reference) Suicide list of Deaths at end of letter D Medical Abstracts at end of letter M
can heat produce fracture of skull and hemorrhage after? 525
cause uncertain 154
from freezing swelling and discoloration not signs of 1299
sudden adrenal pathology in [Simpson] 87 —ab
sudden in 18 month old infant 1221
sudden in pulmonary tuberculosis [Bonn] 1319—ab
time of determination [Mueller] 750—ab
DEAVER JOHN B street named for 800
DEE EM Capsules 606—BI
DEFICIENCY DISEASE See also Nutrition
Scurvy Vitamins etc
syndrome in alcoholism [Romano] 2096—ab
DEFORMITIES See also Bones Crippled
Handicapped Head
progression [Stump] 1306—ab
DEGREES See University
DEHYDRATION of food and electrical refrigeration 1386
DELEEUW Collection See Skin
DELINQUENCY juvenile 723
DELIRIUM Tremens See Alcoholism
DELOUSING See Pediculosis
DEMENTIA PARALYTICA polypeptides in [Claude] 1237—ab
tabelle form treatment 1834
tertialism after malarial and recurrent fever therapy [Plicz] 244—ab
treatment (1920 1933) 369
treatment [O Leary] *1164
DEMENTIA PRAECOX sbut in personality 1687—ab
babits of adjustment 1889—ab
treatment induced epileptic convulsions with metrazol or campbor à la Meduna [Finlefs] 1082—ab [Krnus] 1240—ab [Wortis] 1470—C 1563 [Kasteln] 1862—ab [Eilery] 2106—ab 2152
treatment insulin shock [Larkin] 85—ab (vitamin B and B in) [Freudenberg] 93 —ab 219 [Morse] 465—ab (stuporous conditions after) [Salni] 833—ab [Finlefs] 1082—ab (interruption in) [Hunt & Feldman] *1119 [Cameron & Hoskins] *1246 [Lemere] 1401—ab (vs metrazol) [Wortis] 1470—C (insulin subcutaneously or intra venously) 1567 (definition of coma in) [Brody & Hayman] 1835—C (position for) [Robinson & Laum] 1834—C [Kasteln] 1862—ab (dextrose in) 2089 (electro encephalogram) [Hoagland] 2096—ab [Eilery] 2106—ab 2152
treatment technic of Muniz cerebral leu kotomy [Mattos Pimental] 91—ab
treatment theelin in climacteric [ault & others] *1787
treatment total transfusion [Ridter] 1862 —ab
DENGUE etiology [Colos] 1763—ab
DENTAL Caries See Teeth
Eastman Clinic Paris 1917
Fillings See Teeth
DENTAL—Continued
Infection See Teeth
Lesions See Teeth
Practice See also Medical Abstracts at end of letter M
practice use of nmytal before procaine in 455
DENTIFRICES potassium chlorate in 455
sodium perborate injurious burns from 731
DENTISTS number Japan 2154
DEPOPULATION See Population
DEPRESSION See Mental Depression
DERMAGRAPH instrument for localizing pain [Stern] *346 [Wartenberg] 1294—C
DERMA-LENS 65—BI
DERMATITIS See also Eczema Neurodermatitis Urticaria
between fingers 226
exfoliative and psoriasis 153
exfoliative from iodine [Seymour] 463—ab
exfoliative from sulfanilamide [Myers & others] *1993
factitious or ecthyma 2010
fatty acids and [Ginsberg] 2018—ab
from clothing court claims for increase 286
from hair dye (Oloxo) 286 (Cloral) 2009
from torch oil [Kammer & Callahan] *1511
gold finger nails changes after [Belinfante] 398—ab
herpetiformis 732
Medicamentosa See Arshphenamine Quinine Sulfanilamide
seborrheic of eyelids 810
venenata blisters on legs and feet probably due to weeds 812
venenata from Dictamnus albus (gas plant) [Cummer & Dexter] *495
venenata Spanish moss [Netzer] 1076—ab
DERMATOLOGY American Academy of A M A committee on establishing 44 (organized) 1208 1916
American Board of (examination) 1823
International Congress of (centh) in New York 44 1134 (to publish atlas) 1733
Investigative Society for 440
prize offered by French Society 965
Società di Dermatologia e Sifilografia 201 1920 2153
DERMATOSIS See Skin disease
DERMIS possible toxicity 1836
DESENSITIZATION See Eczema Hay Fever
DESERT Fever See Erythema nodosum
DETROIT Free Press See Newspapers
Plan See Tuberculosis
DEVIL S GRIP See Myositis epidemic
DEWEES Carminative 1060—BI
DEWITT S Cough Syrup Vaporizing Balm 2085—BI
DEXENE 2156—BI
DEXTROSE antihetogenic action [Markees] 915—ab
dosage forms Abbott Laboratories 658
in shock treatment of dementia praecox 2080
infusion fluids new method of preparing [Co Tul & others] *250
oxidation in normal and diabetic [Sheldon] 2100—ab
tolerance in aged [Deren] 1157—ab
DIA BET 1653—BI
DIABETES BRONZE See Hemochromatosis
DIABETES INSIPIDUS treatment roentgen [Cognolin] 1943—ab
DIABETES MELLITUS See also Medical Abstracts at end of letter M
blood carotene content photo electric colorimetric estimation [Stueck & others] *343
blood sugar in children [Kantrow] 2095—ab
carbohydrate metabolism effect of anterior pituitary extract [Lasson] 2110—ab
coma rest nitrogen in [Göpfert] 1943—ab
complications arteriosclerosis obliterans treatment [Collens & Wilensky] *2128
complications circulatory [Radnai] 751—ab
complications gangrene and tetanus 144
complications gangrene buffered sodium citrate chlorides for [Jablons] 522—C (reply) [Bernheim & London] 523—C
complications pernicious anemia [McGregor] 1855—ab
complications tuberculosis [Dunlop] 394—ab
complications tuberculosis predisposes to diabetes [Schedler] 914—ab
complications xanthoma tuberosum in the scrotum [Sugg & Stetson] *414
definition Joslin 802
dextrose oxidation in [Sheldon] 2100—ab
Diet See Diabetes Mellitus treatment
hormones effect on 1657
in children ketonemic vomiting in [Hungerland] 2108—ab
in pregnancy [Tamis & Clair] *198 (allight glycosuria) 1745
Increase relation of higher fat diet vs augn consumption [Sorskind] 631—ab
insulin allergy to 732
insulin in Brady myrepresentations 1282—E
insulin in life expectancy with 812
insulin overdosage in elderly causes angina pectoris [Jordan] 1079—ab
insulin protamine in [Smith] 84—ab [Joslin] *497
insulin protamine zinc and carbohydrate tolerance [Greenhouse] 2099—ab

DIABETES MELLITUS—Continued

Insulin protamine zinc control in surgery [Fowler] 309—ab
 Insulin requirements copper to reduce [Schnetz] 177—ab
 mortality rate 380
 nostrum Carr Laboratories 225—BI
 nostrum Special Treatment for Diabetes 1832—BI
 of skin phagedenic ulcer on basis of [Urbach] 1767—ab
 research Renziehausen Memorial Ward and Clinic Pittsburgh 963
 sodium chloride intake increased in 455
 surgery in relation to [Abell] 238—ab
 trauma in relation to 1474
 treatment 1298
 treatment oral 812
 treatment passive vascular exercise harmful [Edelen] 907—ab
 treatment vitamin B Brady on 1282—E
 weather and 229

DIABETES RENAL [Muach Petersen] 1410—ab

DIAGNOSIS See under names of specific diseases Index to Organization Section

Case History See Case

DIAPHRAGM Paralysis See Paralysis

diaphragmatic infection complications [Coope] 1586—ab

traumatic rupture [Goodman] *1980

DIAPHRAGMATIC SPASM See Myositis epide

DIAPYCN 2085—BI

DIARRHEA See also Dysentery

complicating melena neonatorum raw apple diet for [Corcoran] 166—ab

epidemic of new born in hospital nurseries [Rice & others] *475

in children apple treatment Council report 1636

salt and intestinal flora 1047—E

DIATHERMY Aloe Portable Short Wave Diathermy 586 793

Barr SW-15 Short Wave Radiotherapy and Electro Surgical Unit 951

Beck Lee De Luxe Duo Therm 432

books on electrotherapy and electrocoagulation 895

Burdick SWD Magnetherm 874

Fischertherm Short Wave Diathermy Unit 272 (Super) 2064

High Tension 207

Lepel SWP Portable Short Wave Machine 1364

Majestic Portable Surgical Unit 1042

Majestic Ultra Short Wave Unit 586

Roso CW Radiotherapy Unit 1724 1905

short or ultrashort wave modify bacteria and yeast [Wertheim] 1496—ab (tubercle bacilli) [Mennitis] 1494—ab

short wave 1218

short wave action therapeutic indications [Schleppake] 834—ab

short wave irradiation impair germinal factors? 887

short wave provocative diagnosis of dental infection [Gutzeit] 543—ab

Short Wave Treatment See also Arteriosclerosis Joints disease Stomach secretion

short wave treatment cause of complications [Liebesny] 630—ab

short wave treatment effect on stomach [Nield hard] 996—ab

short wave treatment in various diseases first International Congress discuss 1139

Treatment See Blood Pressure high Diathermy short wave Fallopian Tubes Sinusitis

DIATONE 2085—BI

DIBENZANTHRACENE See diBenzanthracene

DICK Test See Scarlet Fever

DICTAMNUS albus (gas plant) dermatitis from [Cummer & Dexter] *495

DIESEL engine fuel oil penetrates tissue [Rees] *866

DIET See also Food Infants feeding Nutrition Vitamin etc

American Dietetic Association 1208

Apple See Diarrhea

British what is wrong with it? 2149

calory (low) in obesity vitamins needed in 610

effect on damage by aminopyrine [Miller] 1314—ab

effect on morphine habit [Amster] 1240—ab

effect on renal calculi case of South African Negro [Vermooten] *857

effect on resistance to infection [Watson] 993—ab

effect on sterility growth and survival [Watson] 993—ab

for children of school age 1136

Indian effect of supplements [Aykroyd] 1081—ab

ketogenic See also Epilepsy

ketogenic and colon bacilli 228

ketogenic as urinary antiseptic [Walther] *1001

mystery of growth 1056

nephritis and 1202—E [Howard] 1654—C

Salt poor See Salt

DIET—Continued

Therapeutic See Diabetes Mellitus Fistula pancreatic Migraine Urinary Tract infections

DIETENE 1043

DIETHYLENE Dioxide See diEthylene dioxide

Glycol See diEthylene Glycol

DIGESTIVE TRACT See also Gastro Intestinal Tract

tumors sedimentation speed in [Siegel] 93—ab

DIGITALIS See also Gitalin

in body fluids [Schnitzer] 1074—ab

McNeil dosage forms (correction) 276

N N R dosage forms accepted 433

preparations clinical efficacy, [Stroud & Veer] *1808

protect against diphtheria toxin? [Edmunds] 1670—ab

treatment contraindicated in mother nursing child? 731

Upsher Smith dosage forms of 29

DIHYDROXYACETONE See diHydroxyacetone

DINITROPHENOL See diNitrophenol

DIOBRAST use in arteriography [Bird] *1626

DIOXANE chemical formula 1725

Industrial hazard [McConnell] *765

DIOXYACETONE See diHydroxyacetone

DIPHTHERIA antitoxin paralysis after giving 154

antitoxin response in antigens in children [Fraser] 2019—ab

antitoxin tetanus antitoxin not substitute for 1474

bacillus in feces [Clantini] 1083—ab

diagnosis in immunized [Reh] 628—ab

heart after severe form [Thompson] 235—ab

heart in electrocardiogram [Szczeklik] 752—ab

immunization 370 [Stewart & Platou] *1520 (dosage technic) 2081

immunization alum toxoid in children over 8 299

immunization alum toxoid single injection [Straus] 464—ab

immunization duration by various methods [Park] *1681 (correction) 1997

immunization in nurses at Rush Hospital [Anderson] 010—ab

immunization new diluted Schick fluid in [Merrillies] 1492—ab

myocarditis [Begg] 87—ab

necrotic vitamin C therapy 601

of skin producing abscesses 732

paralysis (after antitoxin) 154 (serotherapy) [Crubert] 2171—ab

Romer test 291

serum (sheep) treatment of meningitis 804

specimens (collected swab) [Lenz] 02—ab

toxin digitals protect against? [Edmunds] 1670—ab

toxin dilutions regulation 289

Toxoid Tetanus Toxoid Alum Precipitated Lilly 29

treatment strychnine (large doses) [Paisseau] 2171—ab

DIPOLOSAL (Salysal) 1906

DIRECTOR See Index to Organization Section

DIRT See Dust

DISABILITY See also Index to Organization Section

Insurance fraud heart disease racket 34—E

professional of radiologists 888

DISEASE See also Death under names of specific diseases Medicolegal Abstracts at end of letter M

Carrier See Paratyphoid Typhoid

emotional factors in [Swanton] 394—ab

fight against through the ages 2081

Industrial See Industrial

Rate See Vital Statistics morbidity

reportable (spotted fever psittacosis Maryland) 1285 (Industrial Michigan) 1994

Rockefeller Institute investigation 1550

sickness removes the mask 6—ab

vitamin A reserves in 590—E

DISEASES OF THE CHEST See Journals

DISFIGUREMENT See Medicolegal Abstracts at end of letter M

DISHIDROSIS dermatitis between fingers 227

DISINFECTANT 1 (chloro iso octyl resorcinol) 1368—E

DISLOCATION See Hip Joint Shoulder Spine

DISTENSION Abdominal See Flatulence

DITMAN'S Sea Salt 1741—BI

DIURESIS antidiuretic hormone of posterior pituitary 1545—E

mercuripurin mersalyl and mercurin compared [Herrmann] 167—ab

mercurial 2007

Mercurin N N R 133

rapid dangers [Barker] 1852—ab

DIVERTICULITIS Diverticulosis Diverticulum See Appendix Colon Esophagus Intestines Stomach

DIVOPCE and homosexuality 802

DIZZINESS See Syncope Vertigo

DOCTORS See also Physicians

degree Jews excluded from receiving Ger many 445

DOGS See also Medicolegal Abstracts at end of letter M

alticative for man and 455

Leptosira caalcola epidemic [Roos] 632—ab

rabies 297 (immunizing) 317

typhus or Stuttgart disease 228

worms in danger to man 450

DONAGGIO REACTION after operation [Pazzolo] 469—ab

DONATIONS See Foundations Hospitals Scholarships etc

DONLEY-EVANS and Co citra lactato solution of sulfanilamide 1567

DONORS See Blood Transfusion

DOVOLA nostrums 1832—BI

DRESSINGS See also Medical Supplies

insulating patches from fetal membranes [Johnson] 538—ab

latex substitute for collodion [Narat] *600

DRINKER Respirator See Respirator

DRIP Method See Blood Transfusion

DRIVERS DRIVING See Automobiles

DROPSY See Anemia Ascites Edema

DROUGHT See Index to Organization Section

DRUG STORES See Pharmacy

DRUGGISTS See Pharmacists

DRUGS See also Medical Supplies Pharmacy

copela Medicolegal Abstracts at end of letter M Index to Organization Section

bottle habit under insurance system England 1646

control legislation (new) needed 1546—E

[Beall] 1561—C (proposed) 1911—E *1088

control need of French council 2150

dangerous promotion by detail men [Richter] 1926—C

Dermatitis from See Arsphenamide Sulfanilamide

Fever See Sulfanilamide

Food and Drug Administration to regulate naming of compounds 715—E

toxic [Soper] 294—C

DRUNKENNESS See Alcoholism

DUCREY Vaccine See Vaccines

DUCLESS GLANDS See Endocrine Glands

DUHAMEL GEORGES honored 145

DUKE University 063

DUKE FINGARD method 794—E

DUNN'S Diamond D Braad Gelatins 1637

DUODENAL TUBE fatal gastric suction by [Taylor] *267

DUODENUM contents inflow into bile ducts [Banstrup] 322—ab

disease and spleenomegaly [Vollerra] 1588—ab

pathologic physiology [Walters & others] *1591

tuberculosis [Grossman] 748—ab

Ulcer See Peptic Ulcer

DUO THERM Beck Lee 432

DUST See also Beatonite Sawdust

house dust asthma and abdominal distention 892

Respiratory Disease Caused By See Pneumococci

street tetanus bacilli isolated from [Gilles] *484

tarred road and primary lung tumors [Campbell] 624—ab

DYARFISM in children, anterior pituitary plus thyroid extract for [Jacobsen & Cramer] *101

DYES See also under names of specific dyes as Congo Red

azo dye therapy as urinary antiseptic [Walther] *1001

Hair See Hair

Test See Gallbladder calculi

toxicity of aniline 2158

toxicity of yellow OB [Chimenko] *493

DYNAMITE explosions toxic gases from 1217

DYSENTERY See also Diarrhea

Amebic See Amebiasis

antitoxin preparation [D'Antona] 396—ab

bacillary at Dixon State Hospital 1048

bacillary caused by lactose fermenter of Duval acidophilus diagnostic method [Sullivan] *1024

bacillary epidemic 464—ab (Japan) 2151

bacillus in water (tartaric acid destroys) [Vollerra] 1587—ab

in children [Blacklock] 1405—ab

aerum (polyvalent) New York State disinfectant 1731

DYSMENORRHEA 1928

treatment cauterizing genital spots in nose 2160

DYSOSTOSIS See Bones growth

DYSPEPSIA heart attacks and indigestion 1207

DYSPHAGIA See Swallowing

DYSPEA Paroxysmal See Asthma cardiac

treatment oxygen also helium Inhalation [Barach] 622—ab

DYSTOCIA See Labor complications

DYSTROPHY adiposogenital gonadotropic substances intramuscularly [Plum] 1768—ab

muscular (progressive) and vitamin C [Hirata] 996—ab

muscular (progressive) malarial therapy [Rottmann] 752—ab

muscular (progressive) parathyroid adrenal cortex extracts for [Berman] 876—ab

DEATHS

A

Acheson Frederick Ira 64
Acosta Pedro G 2003
Acres Louisa 64
Adams Burdett Sheridan 208
Adams Edwin Melville 2083
Adams Frank Edwin 604
Addington David Morgan, 374
Adler Harry 2155
Albers Frederick Martin 1058
Aldea Eben 1380
Aldenderfer Clarence Elbert 1380
Aldridge John W 374
Alexander Andrew Boak 1651
Alexander Edgar William 1215
Alexander Harry Lee 1924
Alexander Max John 1672
Allamaa George W 2003
Allea Jonathan H 521
Allea Robert M 1469
Allison Thomas Judson 1468
Alsop Joseph French 2004
Alvarez Luis Fernandez 374
Alvis Edward Carroll 149
Ames Marie A 2084
Anderson Alvar 604
Anderson Carl M 1468
Anderson George Randall 1215
Anderson Gustave E F 2155
Anderson Thomas Ervin 374
Andrews George Dosson 1380
Anglia James Vickers 1215
Anthes Frederick Charles 1215
Appel Theodore Ernest Frederick 890
Archambault Jean Baptiste 2004
Archer John R 2004
Armes Geo W 1739
Armisen Karl Wilhelm 1740
Armstrong Irving Foster 1739
Armstrong William John Malcolm 2083
Arnold Ulysses S Grant 2084
Asbourn Claude Veltz 1469
Alberta Henry Grady 1923
Atlas Jessie Beaumont 374
Atlee Louis William 1058
Attwood William Gillisple 1652
Atwood Reuben Jay 1059
Auer Joseph Ernest 1050
Avery Archer 1924
Avery Jacob Fowler 880
Ayers Franklin De Wight 971
Ayres Winfield 292

B

Babbitt George Ashton 1059
Babcock Marcus E 1831
Bacerville Anthony Matthew 1469
Bacon Lyman Bon 373
Bader George Washington 1215
Bagby Oliver 100
Bagdad Zia Mabsut 64
Bailey Augustus Bruce 1023
Bailey Harry Brawley 374
Bailey Wilson Gili 1469
Baker Joseph K 2084
Baker Rinaldo Everett 374
Baker Sydney J 1652
Baldwin Holmes Harriet Elizabeth 1214
Baldwin Herbert J 1924
Ball Charles Dexter 889
Ballantyne Reginald Malcolm 970
Bamber Richard W 448
Barber Eva St Clair Oshorn 1215
Barber Herbert Leslie 1831
Barber Martin C 1651
Barber Walter Edgar 373
Barbour George H 1469
Barfield Jesse Morton 604
Barker Joseph L 374
Barkley Archibald Henry 603
Barlow Walter Jarvis 1468
Barnett James R Jr 1215
Barney Fredk Morgan 1652
Bartlett John Wilbur 1469
Bartlett Walter E 604
Basch Samuel Elmhach Behrend 1468
Bass Harris Hartwell Sr 374
Bates Amos D 1924
Batt Wilmer Ridgway 1924
Baxter Holly M 374
Baxter James N 150
Baxter Leroy Worth 1924
Baylor Frank W 520
Bean Harvey F 64
Beardslev Herbert V 1652
Beardsley John Wallace 1652
Beck John Edwin 64
Becker Chas 374
Beckler Henri 1648
Beede Clark Eli 64
Beer Frederick Leslie 604
Beblow Wm Wallace 63
Belanger David Simeon 1215
Bell Earl 1215

Bell James Edward 64
Bell James Thomas 1652
Bell Joseph Alexander 149
Bell Mabel T 2083
Bemis Harvey May 2083
Bennett Benjamin H 150
Bennotte Mario Antoinette 1215
Bentley Henry Rogers 1652
Bentley William S 1830
Benz Charles August 1214
Benzle, Clinton Anthony, 1830
Bergoy David Hendricks 1558
Borlingor Robert 604
Bernard Frank F 64
Bernard William A 1293
Berns Simon P 2084
Berry H Ellen Walker 2084
Berrymann John William 2155
Berthelma Denis J H 1831
Bethune Fred Hyde 1380
Botts Arthur 1830
Bickford Frank James 1379
Biddle James Kester 1215
Bierhoff Frederic 1214
Bligny John Francis 889
Bill Benjamin Jephthah 1651
Blinkov Frederick Mills 1059
Bird John Thomas Joseph 970
Bliscoe Frank Lee 1293
Bjorison Olafur 2083
Black Arthur Davenport 2155
Black Frank W 1652
Black Howard John 1652
Black John Wm 1651
Black Jotham Freathy 604
Blackmon Herman Isaac Edward 2084
Blackshire Frank R 2084
Blanch Julia E 448
Blake Jos Augustus 726
Blakely Thomas B 374
Blanchard Frank Guy 971
Blanton Lewis J 64
Blinn Arthur Boyd 1830
Blodgett Abbie 1652
Bock Clarence Leroy 1293
Boggs Charles Sumner 1652
Boivin J Narcisse 1469
Boon Wm Thos 64
Borck Henrietta A Stoffregen 1293
Borley William Ernest 971
Boseman Claudio Alfred 1293
Bovell Alfred Ernest 1059
Bowen Frederick John 1215
Bowen Horace 1293
Bower Emma Eliza 2084
Bowers John Thompson 604
Bowman Harlan Page 63
Bowman Paul Newkirk 63
Boyd Clarence La Verne 63
Boyer Jephtha Silas 1831
Boylan Walter M 971
Bradbury Edwin Lewis 1059
Bradley Henry Jacob 1931
Bradshaw Claude Jacob 1215
Brandenburg Wilbur Henry Rietz 373
Brasington Ernest Cuesten 1215
Bray Charles William 1214
Brayton Frank Alembert 2003
Brennan Ambrose Kirk 374
Bresce Charles Harmon 1831
Brett Edward Joseph 604
Brett John Henry 2155
Brewer Joseph McDowell 1831
Brewer William J 521
Brewster Cora Belle 1380
Brides Arthur Edward 2083
Bridges Alvan Clayton 2084
Bridgwater James Erman 64
Brinkman George Henry 1468
Broadrup George Lincoln 64
Broman Oscar Francis 2083
Brothers Thomas Jefferson 2003
Brown Arthur Valentine 1141
Brown Clayton Allen 1469
Brown Douglas 603
Brown Edward V 727
Brown Harry Ver Brice 970
Brown H Bentlie 1468
Brown Melvin James 727
Brown Newbern Nuckolls 890
Brown Wilber Franklin 1831
Brownell Edward Erle 374
Bruen Curtis 1469
Brunson William Edgar 374
Brunson W See Brunson William Edgar
Bryan William Holmes 2004
Bryant Charles Sawyer 1215
Bryant R W 2084
Bryant Willis J 64
Bryson Robert H 1059
Buchanan George 1141
Buchanan John Jenkins 1468
Buchanan Roy M 1215
Buckman Ernest Ustick 726
Buel John Laddaw 1923
Bullock Frederick Dabney 1379

Burchfield Samuel Newton 448
Burleson David Patton Jr 448
Burnaman William Cecil 971
Burns Joseph Patrick 727
Burns William Thomas 971
Burnside Chas S 64
Busey John F 1652
Bush Franklin Worthington 374
Butterfield Alfred Mitchell 224
Buzby Benjamin Franklin 1468
Byington Roderick 1058

C

Cadigan John Joseph 601
Caldwell John Caheen 373
Caldwell William Elry 1830
Caley Joseph Morse 1059
Call Emma Louisa 373
Call Merlyn Bush 1215
Cameron John Douglas 1652
Camp Mary Augusta 971
Campbell Albert Edward 1215
Campbell Asa Douglass 374
Campbell Charles Alexander 1215
Campbell John Stannard 64
Capps James Monroe 448
Carlton Benjamin Harvey 1215
Carrn William Merrick 1141
Carney J M 604
Carpenter Alonzo L 971
Carpenter Frank Blush 604
Carr Clark McPherrin 521
Carruth Leander Orr 1652
Cary John Herschel 1651
Cass Henry Martin 2003
Casselman Simon Blismark 1652
Caswell Charles Oscar 070
Cavanaugh Thomas Edward 1059
Ceconi Angelo (Prof) 62
Chapin Walter Henry 63
Chapman Robert Fendall Jr 1469
Chenoweth Ephraim B 1651
Chester John Leonard 373
Child Frank Malcolm 727
Childs Edward Payson 521
Chilton Geo Wesley 2003
Chisholm Gibbs 2083
Chumbley Chas A 64
Churchman John Woolman 373
Clitrynell Alfred Abraham 2155
Clark Charles Milton 1214
Clark Edwin L 2084
Clark Frank Butler 374
Clark William A 1215
Clayton Augustus W 1293
Clayton George R 2003
Clement James Arthur 293
Clemmer Joseph L 64
Cliff George W 1469
Clifton George Millard 971
Clouse Morris Whitfield 1652
Clower George F (Rev) 594
Clyburn William Richard 1651
Cochens Frank Mathias 1831
Cochran Owen W 1651
Cockfield LeRoy A 64
Coe Harry Carson 604
Coffelt Theodore Albinus 1923
Cole Blase 2083
Cole William Gilbert 1651
Coles Stricker 604
Colgan Frank John 2155
Colgin William Edward 1651
Collier Theodore Elliott 374
Collier Ward Alexander 1469
Collins Edward Everett 971
Collins Thomas F 1469
Collison Frank Jerome 1469
Colver Harley Ross 1651
Colvin Nathan Billings 604
Comstock Fred Waller 1215
Conley Frederic Warren 604
Conley Lawrence Parker 373
Conlon Frank Aloysius 727
Conn Caroline Connell 1652
Connell William Adams 1740
Conover Guy De Vus 521
Conroy Timothy L 1652
Conway John H 2084
Conway Michael Waldon 373
Cook Finley Ransom 374
Cooley Elmer Burt 1830
Coontz William H 150
Cooper Henry Sisson 2083
Corbit Allen Marjory Betseys 1141
Cory Kate Whipple 64
Cosner Philip H 374
Cotter Stephen Vincent 374
Cottle Isaac N 2084
Cotton George Kuester 63
Coultas Rufus James 63
Coulthard Walter Livingston 971
Cowperthwaite Joseph Ewing 2084
Cox Ernest Lee 2083
Cox Wiser 1469
Coyle David Archibald 1469
Coyle Wm Penn 1215
Craddock Frank B 890

Craig Fletcher F 971
Craig John Eldon 150
Cramer Isadore Henry 373
Crandall Alice Huff 1652
Crane Bayard Taylor 1651
Cranford George T 2083
Crawford John Franklin 64
Crawford Malcolm McLachlan 374
Crawford Wm Tilton 64
Crociechia Anthony 374
Croghan Francis Edward 224
Cromwell Martin John 1215
Crookston Wm Judd 1651
Cross Kilpatrick 1141
Crounse Frederic 1559
Cryder Ermlne Stevenson 149
Cryer George Alonzo 373
Cullen George 2083
Culpepper Walter Flsk See Culpepper Wilbur Flsk
Culpepper Wilbur Flsk 448
Cumberworth Ora Harland 1141
Cummings William A E 448
Cummings William Clovis 1924
Cunningham Chas Hunter 1214
Cunningham Charles Michael 604
Currie Charles A 604
Curry Thomas W 1652
Curtis Adelaide Dutcher See Dutch
Custer Matthew Lee 1740

D

DaCosta Harold Fonseca 374
D'Agostino Joseph Martin 604
Dahall William Forest 521
Dale Charles 890
Daland Judson 726
Dale Robert Rodney 373
Dale William R 1924
Daley Daniel Francis 63
Daltou Eugene S 64
Daltou George 971
Daly Timothy Joseph 1924
Danforth Mary Shepherd 1651
Daniell Bamfylde 61
Daniels Lewis Minort 448
Dassell Margaret Nichols 1380
Davelaar Garret W 1651
Davenport St Elmo 071
Daves Albert Charles 1460
Davis Charles Edward 2084
Davis Charles Ludrey 1214
Davis Fannie 64
Davis Francis M 1831
Davis Frederick F 1215
Davis George Young 1379
Davis John Lewis 64
Davis Lewis Ellwood 293
Davis Thomas Jackson 890
Davis Thomas S 1830
Davison Robert Edward 63
Day Howard W 890
Deal Sebron Edgar 1469
De Berry Elstner H 1469
DeBey Albert 1740
Dederick Adelbert Stephen 1215
DeForest William Clifford 890
Degan Katherine Iris Howard 1059
Deitch Oscar Solomon 1469
Deinlage Frederick William 1830
DeLaPerriere Green Herschel 889
De Laperonne Felix (Prof) 285
803
Della Valle Francesco 1467
De Loney Julian L 970
De May William Alonzo 071
Dempsey William Thomas 2084
Dendy William Robert 1740
Derby Fredk Wm 1652
Derry Henry Lrentiss 1651
Derry Wm Edgar 1652
De Shazo John Newton 971
DeSombre Karl Louis 890
De Vanny David Alphonsus 1831
De Vausney Winfield Scott 63
Dewey George Laurin 61
De Witt Jr Charles Alsop 2081
De Wolf Frank L 2084
Dexter Chas Amor 1779
Dickie Jamlo William 1141
Dickson Thomas Gordon 1215
Dille Frederick Edwards 1558
Diner Jacob 1140
Dinsmore Virgil Francis 1651
Dismukes Henry Wesley 1215
Dixon Albert A 61
Djellalian Arklor See Jellal Arklor
Dobson George Henry 1652
Dodd Clinton Quincy 971
Dodd John Andrew 1923
Dodge Henry Nehemiah 1215
Dodge W Lee 63
Doherty William Brown 1215
Donaldson Charles A 447
Donnelly William S 1141
Doodokyan Ypros Martin 2155
Doollittle Wm Howe 67
Dorr Lucius Bradley 374

- Dorsett Rae Shepard 1923
Dorsey, Frank Bilan 1830
Douglass Hugh Stanley 1141
Douglass Edmund Peaslee 293
Douglass James Howard 808
Dowling John Francis 1140
Downey James Henry 1468
Downing Samuel 808
Doyle Harrison H 1380
Drach John H 2155
Dress Robert William 890
Drew Maria Emma 1923
Drouillard Alfred C 374
Drummond, Peter 2003
Drury Emory J 1652
DuBeau Joseph D Napoleon 521
DuBols Julian Arthur 373
Duffy Leinster 2004
Duke Andrew Warwick 1059
Duke William Middleton 374
Dunbar Harry T 1652
Duncan Charles Lucas 1831
Duncan Edwin W 2004
Duncan William Joseph 521
Dunkle Gally Barr 448
Dunlevy Rita Ehrmann 1141
Dunn Ralph Henry 1559
Durdan Wm Willis 64
Dutcher Adelaide 1924
Dyson Eugene Burdett 1740
- E
Eames H Franklin 1469
Easley Edwin M 1924
Easterday, Emma M Meinhardt 1651
Eastham J George 1469
Eastland John Shepherd 2155
Ebersole Sol D 64
Ehlen George J 890
Eckardt Alonzo Burton 889
Ecroyd Henry 808
Edmond Marion 224
Edward George 808
Edwards Lewis 63
Eggleston Elmer Leslie 292
Eggleston William Meade 2084
Ehrlich Silo 1559
Eichberg Louis Robert 1141
Eidemann John Christian 374
Elger James T 890
Elliot Charles Schomberg 1059
Ellis, Cooley S 2004
Ellis Robert C 1215
Elmendorf Edward H 1651
Elrod John Oscar 63
Elling Richard Lounsbury 373
Elwood John Lewis 293
Emerson William Samuel 373
Emery Frank W 293
Endo Shigekyo 289
Entwistle Robert Morgan 1923
Epstein Vey Joseph 889
Erh Theodore Charles 1559
Essick, George C 448
Estes, David Gilbert 2004
Estes Jack Martin 2155
Evans Thomas Jefferson 1651
Evans William Allen 1924
Eve Hinton James 64
- F
Fahnestock Ernest 63
Fairchild Paul H 1059
Fairfield Charles Alexander Durham 1559
Fall William R 1652
Falvey Humphrey John 1924
Farbach Henry J 1140
Farlow Elsha H F 1215
Farlow John Woodford 2155
Farmer Lydia Etta Smith 1380
Farmer Roy John 1831
Farrington Ernest Albert 63
Farrington Wm Prentice 63
Farris John Kennerly Jr 64
Farwell Franklin Pierce 63
Faust W Z 1469
Feemster Lucien Carl 447
Fenerty, Vincent John 149
Fertier Edgar Garland 64
Fetterman James McElroy 727
Fiala Martin Josef 1652
Fidler Henry 2155
Field Albert 1651
Fields David Blackstone 604
Finley Emmett May 1469
Finley Frank Woolford 727
Fischer Haydn Lyle 1923
Fish Edman Payson 448
Fitch Albert Franklin 64
Fitzgerald Peter H 2155
Fitzgerald William Pierce 2004
Flag John Dods 1379
Flannery Robert Emmett 63
Fleischman Jerome Cornell 971
Fleming William James 727
Flynn Thomas Jos 1214
Forerty William Clemmons 1651
Folk Max Lyon 726
Foltz James A 373
Ford William C 1140
- Forgues, J A Hector 150
Foster Lee Orrion, 521
Foster Richard L 63
Fouchy Alphonse Denis, 150
Fourgeaud Louis 2084
Fowler Fred Abram 1740
Fox Charles James 224
Frail Harry B 1651
Franklin Charles Mayer 63
Freeman Ralph 63
Frey Arthur Garfield 63
Friedman Nathan 1469
Friend Charles Frederick 2155
Frison Taylor Jirardeau 2004
Froehlich Herman William 727
Frontis David Beaty 2004
Frucht Morris 1469
Fryer Emma Theresa 1059
Fuller Quintus Colton 1923
Fulton William Grosvenor 2003
Funk Bernard John 1059
Funk Fred Raymond 1831
Fuqua William Beckwith Jr 890
Furman Frank S 890
- G
Gaddie David W 1141
Gallardet Louis Philippe 373
Gaines Lewis McFarland 148
Galvin Joseph Emmitt 292
Gamble Blake E 1380
Garrabrant Clarence 2004
Garvin Daniel Edson 1380
Gaskill Ralph Pern 374
Gates Lemont Addison 1652
Gaul Adolph Carl Adam 293
Gault Fred H 64
Gedney Frederick Mears 64
Gelz John James 808
George Oren Ellsworth 64
Georgi Frederick Dold 1380
Gibbs Arthur Myers 63
Gibson Cicero 521
Gibson James L 1059
Gibson James Robert 448
Gibson Timothy Thomas 1293
Giguere Alfred Joseph 1924
Gilde James Bennett 374
Gillespie Green B 63
Gillespie Martin S 1380
Gillett Wm Roswell 1651
Gillim Parvin Douglas 63
Gillmore Park McConnell 374
Gilmore Robert A 374
Glosmeyer Louis H 1380
Goddard George Michael 520
Goldenberg Hermann 63
Goldenberg Jacob 448
Goldenfranz Solomon 448
Good Clarence Allen 1293
Goodkind Robert Putnam 2084
Goodman Emma Comly Waln 224
Goodman James M 1740
Goodner Ralph Allison 2003
Goodrich Stephen W 1380
Goodwin Warren C 447
Goodwin William Hall 373
Gordner John Franklin 64
Gordon Eugene C 889
Gordon George 1059
Gordon Onslow Allen 1058
Gothard Joseph William 149
Gould Everett Willoughby 1651
Grady John 374
Grady James Joseph 1380
Graham Isaac Errett 889
Graham John C 890
Grant Walter Scott 64
Graves Dorr 1740
Graves Louis Green 1380
Graves William H 1380
Gravino Frank Anthony 374
Gray Frank Pierce 971
Gray Joseph G 149
Grear D Watson 889
Green Isadore L 1059
Greene Lee Bey 373
Greenchaum, Henry Arthur 890
Greenhut Armin 1652
Greenwood Fred S 1831
Greenwood Hugh Allison 223
Greer Eugene G 1293
Greer William Henry 1651
Gregory John H 448
Gregory Myron Stephen 148
Greiner Chas M 64
Greire, John Ernest 2155
Griffin Cicero Frank 1559
Griffin Judson V 1059
Griffith Robert Blake 521
Grissim John De Lafayette 1379
Groody Hazley Thomas 889
Groom Wm Simpson 1652
Gross Jacob M 64
Gross Louis 1830
Groves John J 448
Grubbs Royal Wm 150
Grubbs, William Francis 149
Grundy Henry 224
Gullinan Joseph Bernard 149
Gulledge Eddie Abram 521
Gunderson Elmer Alfred 149
- H
Haas Jacob 2155
Hackler Garfield McCoy 373
Haeberle Frederick S 1293
Haffner Ernest L 448
Hagedorn Edwin Francis 1924
Hagen Carl 448
Haight Arthur Lampton 1293
Hall Frank Jerome 1059
Hall Harry Lawrence 148
Hall Thomas Henry 2003
Hallowell Frank Kirkwood 292
Halloway Timothy Joseph 1380
Halperin Morris S 1740
Hammond Charles 2004
Hammond Frederick Porter 727
Handelman Harry Joseph 1215
Hands William Charles 1830
Haney Arthur Herbert, 149
Haney James M 149
Hanigan Roscoe Serrel K 1379
Hanley Joseph M, 1380
Hanna George Carson 1924
Hannum William 1559
Hansberry James S 1652
Hansel George B 1652
Harbinston Charles Howard 521
Harding Jacob Dwight 447
Hart Bernham Gustav 1214
Hargest George W 521
Harloe Walter Weldon 148
Harlow Corydon Webster 1379
Harp Henry John 149
Harper Frederick Samuel 1059
Harper Walter Q 2004
Harrington Andrew Jerome 1559
Harris Walter Callahan 1379
Harrison Laurie Longley 890
Harrold Edwin Orrin 1379
Harrower David 1468
Hart Arthur O 1379
Hart Charles Oliver 1924
Hart David Aaron 520
Hart Frederic Clinton 149
Hart Frederick C See Hart Fred
eric Clinton
Hart George Fred 890
Hart Robert Watson 448
Hartill Eleanor A 1059
Hartman Morris David 149
Hartzell Jonas Dahner 1380
Harwood Charles Baxter 890
Haskins George William 149
Hassel M David 1058
Hatfield Daniel Samuel 1739
Hatfield William Alexander, 448
Haugh John A E 1469
Haverstock Arthur David 1923
Hawkins Alexander Stephens 1379
Hawley Edwin Peppers 1831
Hayes Daniel Francis 447
Hays Roberts Bartholow 149
Hays Sterling O 64
Haywood Charles Wesley 1379
Hearne Chas Sheppard 1739
Heflin Howell Towles 808
Heldier George Kendall 1924
Belmark Andrew John 2004
Hein Henry 149
Heltzman Chas Wm 64
Helfrich Calvin E 149
Heller Austin D 1740
Helprin Benjamin Edel 890
Hembree Oren V 1831
Henderson Edward Warren 1740
Henderson James Paul 521
Henley Lindsey Hoag 1652
Henry George F 2004
Henry James Edward Francis 1469
Henssler Otto W 1380
Herh Henry Heydt 521
Herhilton Milton H 2004
Herman Harry John 150
Hess James Samuel 2004
Hewitt Archie Edelen 1380
Hewitt Charles 1652
Hitt Edgar Raymond 2155
Hickman, Charles C 149
Hickman Walter Allee 448
Hicks Frank Benjamin 1740
Hiden Joseph Hart 1924
Higgins Charles Wesley 1740
Hildreth William Warren 2155
Hilgartner Henry Louis 726
Hill Dennis L 2155
Hill Hugh Hodge 890
Hill Mattie Isabel Foster 448
Hill William Lee 1059
Hillard David Alexander 1380
Hinckley Don H 2004
Hirschle Harry Griffith 447
Hite James A D 1924
Holt Thomas S 1059
Hobdy Fount E 1469
Hodges Duff M 2004
Hodgman Alfred Frederick 1293
Hodkins John Allan 1740
Hoehner Paul B 718
Hogan William Joseph 447
- Hohenschuh Frank Adam 293
Holmes Benjamin Logan, 1380
Holmes Harriet Elizabeth Balch
See Balch Holmes Harriet Eliza
bell
Holt Jr William Preston 2083
Hood John Sidney 2004
Hood Joseph Napoleon 1740
Hooge Ludwig Frederick, 2155
Hoole Dr 61
Hooper John Marion 447
Hopkins Bertrand Hiram, 1831
Hopkins William Wilder 1215
Hornbaker Frank Wandling 808
Hornor Dayton H 2084
Horton Charles W 293
Hotchkiss Walter Kendrick 1370
Houchen Homer A 1831
Houston Edward Brent 447
Houston James Lafayette 448
Howard Katherine Iris Sec Degan,
Katherine Iris Howard
Howard Leroy Taylor, 2003
Howard Theodore S 1059
Howell Charles Hicks 1059
Howell, John Taylor 1293
Hoyer Albert Marion 971
Hubbard Samuel Dana 1214
Hubbell Adelbert Vinton 1379
Huber Walter Amhrose 2084
Huekins Millicent Lendora See
Huekins Millicent Lendora
Hudnutt Frank Orrin 1740
Huff Charles William 2003
Huff John B 890
Huff Oliver Nixon, 149
Huffman Otto Von 808
Huffman William Grant 890
Hughes Maurice Langan 1739
Hull Robert Clarence 1380
Hummel H Richard 1740
Humpert Geo A 149
Humphreys Samuel Million 2155
Hunt Alonzo Clark 1214
Hunt Frederick Austin 149
Hunt James Ramsay 603
Hunt Levi Willie 149
Hunt Robert Bates 971
Hunter Alexander Clyde 604
Hunter J W 374
Hurley John Jos 1740
Hurst Reuben Elmer 808
Husted Jane Roney 64
Hutchins John L 1652
Hutchins Millicent Lendora 1469
Hutto Lytleton Thomas 1380
- I
Idol Willis 1380
Imel Edward Stanton Sr, 521
Irish, Isaac Chase 2004
Irish Robert Linton 727
Irwin George G 1215
Irwin, Robert Crawford 1215
Iuen William Christian, 1740
- J
Jackson Thomas Jefferson 1831
Jackson Walter Jordan 1924
Jacobaeus Hans Christian, 1733
Jacobs John C 149
Jamson Charles Howard 727
Jameson Archibald 1924
Jameson Earl 1379
James, Benjamin Franklin Jr, 149
Jaquet Alfred 806
Jefferies Elmor C 448
Jelal Kirkor, 521
Jenkins Edward Orestes, 1141
Jenne James Nathaniel 1468
Jewett Carlton Rogers 447
Jinks William F 1469
John, Jacob Stacey 1559
Johns John Bunyon 224
Johns John Garrell 521
Johnson Charles Hymen 1740
Johnson Claes William, 2155
Johnson Frederic Charles See John
son Frederick Charles
Johnson Frederick Charles 1370
Johnson George Washington 224
Johnson Henry Benton 448
Johnson James Manuel 2155
Johnson Laura Mann 149
Johnson, Lee 150
Johnson Lola Annetta 521
Johnson Philip Tullius 1559
Johnston Christopher H, 149
Johnstone William McKee, 447
Jones Aubrey Vernon 149
Jones Clarence Dupree 150
Jones Daniel Fiske 1058
Jones Frederick Ellis 2003
Jones Grace 1740
Jones James W 448
Jones John Clark 727
Jones Ralph Phillip 1740
Jones Robert Paul 889
Jones Samuel Everett 1821
Jones Solomon 2003
Jones William Alsty 727

Jouett Emerit E 1468
Joy, Henry Milnor 447
Judge Thomas Francis 808
Judy Perry McSwain 1469
Junkerman Ullric Zwingle 2004
Justin John Clement, 1739

K

Kaffe Leopold 2004
Kaha Max 1924
Kathan Dayton L 521
Katzenberg Meyer 1380
Katzastela George Paul 148
Kauffman Edward Charles 2004
Kauffman John William 1550
Keating Hugh F 1651
Keegan Harold Richard 1370
Keenan Francis A 521
Kefauver Maurice D 889
Kellogg Vernon Lyman (LLD) 595
Kellogg Wilmer Clinton 521
Kelly Simeon 1380
Kelsheimer Ira D 447
Kemp Gustave 971
Readall Frank Elliott 448
Readall Maier Raymond 1140
Readrick Chalmers Nash 150
Reinhold Harrie W 1740
Kenyon Thomas Alexander 1558
Kern Bert Chamberlain 1924
Kerr John Jonas 800
Kerry Frank Milner 1380
Ketchum Marshall Bidwell 150
Kild Richard Turnbull 1831
Kilham Eleanor Bridge 148
Killeen Mary Augusta 1469
King Frederick E 374
King George Lincoln Sr 1058
Kirk Robert Crump 447
Kjelland Jacob S 1059
Klein Frank Charles 149
Kleinhof Eneas Benjamin 889
Klimas Enoch George 448
Klopper Henry Charles L 1559
Knipe Franklin Austin 1215
Knories Edwin Winslow 1739
Knowlton John Greenleaf Whitlitt 149
Knowlton William Thomas 1380
Koch Oswin Fred 1740
Koonat David Michael 448
Kraus Fred Joseph 1141
Krause Fedor Prof 1920
Kremer Rudolph Johannes 1558
Krieger Curt Herbert 1739
Kuhn Leroy Philip 520
Kurtz Nellie Ettie 727

L

LaBaume Lydia Howell 1059
Lacewell John F 1831
Lachner Bernard Joseph 1293
Ladlaw George Frederick 890
Lake Elijah Sherman 1831
Lalonde Joseph Nere 149
Lambert Oscar A 224
Lambert Samuel Ernest 1293
La Notte Henry 1923
Lands Henry Robert Murray 1379
Lane Charles Lloyd See Lane Lloyd Charles
Lane Lloyd Charles 971
Lane Willard Mercer 447
Langdon Henry Harlan 447
Lange Hugo 1740
Lange Ignatz 224
Laakford Alice Catherine Flitzsism 2003
Laakford William J 150
Lankovsky Wladimir Nikolas 1059
Lapersonae Felix de See de Laperonae Felix
La Raja Onofrio 2084
Largen Douglas 149
Larkin Cyril James 1923
Lattin Frank H 447
Laubach Charles Adam 727
Law Edward Frederick 1559
La Wall Charles H 2076
Lawson Sidney D 448
Lazarus William Wheelock 148
Leach George Chauncey 150
Leach Hubert Felix 1141
Leatherman C E 150
Lee John 2003
Leech Louis Josiah 2083
Leffers Richard 150
Legr Albert N 448
Lemman Isaac Ivan 1379
Le Master Ord Otterbein 2004
Lemchen Barnett 889
Leonard John David 293
Leone Charles 1141
LeRoy Paul 1559
Lester John Grego 2003
Letts James P 1740
Leu Raymond Hansford 1651
Leuty Amos 971
Levia Zemach 1622
Lewis George Fred 727
Leyko Julius Joseph 726
Lichtenstein Hans Moritz 1559

Lillard Reese Q 447
Lincoln, Harry M 2004
Lindner, John William 1058
Linthicum John W 224
Linzey James R 224
Lippmann Gustavo 447
Littleton Robert Yantis 448
Livingston Theodore P 1830
Lockard Lorenzo B 1293
Logan Fredrick Wallace 520
Long Chas 148
Long Francis A 2155
Long Gross Ransom 149
Long Herbert Wilson 971
Long Silas Clifford 1469
Long William Hamilton 1558
Longacre Charles E 1831
Lonthrop Edwin S 2004
Lotz George Carl 150
Loveland John Elijah 1023
Lowe Edmund Peyton 890
Lucke Robert Sidney 448
Lund George Jesse 448
Lyman John Grant 1559
Lynd Robert S 1924
Lyon Darwin Oliver 149
Lyster Preston Allan Miller 224
Lyston John Thomas 521
Lyter Jonas Curtis 1830

M

McAleney James Lawrence 1059
McAlvin James Gregg 293
McAuliffe Edwin Louis 890
McBride John Sherwood 2083
McCann Thomas H 2155
McCartney Jesse Thomas 1559
McCart David Wilson Sr 1739
McCart John F 149
McCasland Herbert Sawyer 2084
McCauley William Anderson 1380
McClain John Wyatt 890
McClain William Lee 293
McClendon Edgar Franklin 1058
McClinton Frank T 149
McClinton Frank M See McClintic Frank T
McClinton James Blainie Hall 150
McClurkin Joseph Cameron 2003
McClusky Henry Lincoln 889
McCollum Lucian Rufus 448
McCollum Sally Josephine 223
McComb Earl Vinton 1141
McComb J Baldwin 223
McConathy Herbert M 224
McConnell Clyde Robert 447
McConnell William Ethelbert 447
McCoy Calvin L 448
McCoy Joseph Newton 293
McCoy Samuel Harvey 224
McCoy Thomas S 2004
McCracken Archibald Rowan 293
McCrury Joseph 1652
McCreery Clarence Charles 224
McCreery Forbes Robert 889
McCreery John E 224
McCullough Alice A Stoddard 890
McDaniels Minor 889
McDevitt James John 448
McDonald Alexander 1740
McDonald George Albert 2155
McDonald James Edward 1740
Macdonald John Donald 149
McDonough William Connely 223
McDorman Vera Mae Irene 224
McElroy Riley Park 448
McElveen Thomas R 1469
MacFarland Erwin Golly 1830
MacFarlane James Patterson 1652
McFarling Charles W 224
McGee James William 1739
McGehee Marshall M 1652
McGinnis Clive Sidaey 521
McIlhenny James Smith 448
McIlmoyl Henry A 2004
McInnis Israel L 890
McIntosh William B 2004
McIntyre George Crarer 2083
Mack Burton Wilson 726
McKamy Anna Isabelle 447
McKee James Freeborn 1831
McKenna Francis Patrick 2083
McKenzie Chas D 224
Mackie Nathan Walser 447
McLaughlin Alphonso James 292
McMahon John E 1469
MacMillan James Alexander 1140
MacMillan Marion Blaisdell 2003
McNaughton David Decker 1141
McNaughton James Alexander 224
MacNeil Charles Seward Jadis 1058
McNeill Robert John 1831
MacPherson John Donald 448
McRae John David 224
MacVane Ernest Franklin 1651
Macy Heary Covington 150
Madison Erly H 2004
Maher Jeremiah 971
Mahone Paul James 1059
Malloy Jay Stephen 2084
Malone Jeremiah Dumas 149
Maione Stephen Benjamin 1058
Mammen Ernest 1739

Manchester Harry Alexander 224
Manges Monroe 1203
Manly Clarence Julius 1058
Mann Edward Cox 1652
Marx Ernest Guthrie 889
Markham Harold Boyce 2083
Marlett Woodman Robert 1141
Marshelder Frederick Edward 890
Marsden James Timothy 1141
Marshall Charles Edwin 2084
Martin Alonzo 890
Martin Charles Thomas 1924
Martin John Edward 1468
Martin John T 1469
Martindale George Hicks 1924
Martucci Louis 1559
Mason Elijah Lumbia 1739
Mason Robert Lowell 149
Massey Brndford 1739
Massey Henry Franklin 150
Matheson James Pleasant 1468
Matheson William R 1380
Matheson Wm Kirk 1740
Maupin Edward Griffith 447
May Herbert 727
Mayne Saml Bell 1739
Maxwell Maurice Hopkins 1923
Mayerson Solomon Oliver 2004
Mayfield George W 800
Mayo Robert William Bainbridge 1830
Mead Arthur Ross 224
Mearor William Craig 2003
Mecca James John 223
Medd Henry 224
Medley John Edward 890
Meek John Washington 2004
Melssner Carl Herbert 1559
Melvin Wayman C 223
Mercer Robert L 2084
Merriam Adeline Ella Colt 448
Merrill Solon W 1831
Mershon Edward N B 223
Meyer Leon Leopold 1559
Meyers Royal E 1469
Mal Leonidas Le May 1739
Michell Ferdinando (Prof) 519
Middleton Wm John 223
Miesse Charles 448
Milburn Edward Bryant 224
Mildenberg Victor 223
Miller Edwin Horace 1831
Miller Eugene S 224
Miller Harold Austin 1559
Miller Joseph Leggett 520
Miller Richard Hagan 1739
Miller Seth Eugene 890
Mims Samuel W 1141
Miner Irving Camp 1059
Mingus Everett 292
Minier Francis Gabriel 223
Minor Ernest Blake 808
Minton Eugene Joseph 1469
Mimble Erving W 890
Mitchell John Barnett 224
Mitchell Leopold 1379
Mitchell Ringgold Scott 448
Moates Guy Hart 1559
Mohler Duke Goodman 1740
Mooney James D 374
Moore John Henry 889
Moore John J 1652
Moore Sir John W 1552
Morrell Rexford Jennings 1559
Morris Edward Joseph 727
Morris Frank S 727
Morrow William T 521
Morse Frederick Otis 2083
Morse William Fredk 1739
Moser George Joseph 2155
Moss Frederic Henry 1293
Mounford George Thomas 448
Mulr John Wesley 293
Munford Henry Kendall 1462
Mulberry Hugh J 1559
Mulligan Thomas 1141
Mumaugh Shelby 889
Murphy Walter A 889
Murphy John Christostom 1740
Murphy Joseph Briggs 2004
Murphy Michael Joseph 2084
Murphy William Bailey 447
Murphy William L 1293
Murray Edward Thomas 521
Muth Frederick Lucius 224
Myers John Ezra 448
Myers Louis Winfield 224
Myers Sylvan 223

N

Nash Marie Antoinette Benacette
See Bennette Marie Antoinette
Neal Carl Eugene 448
Neale Henry Varion 808
Neely John Gilmore 1469
Neuss William 2083
Newby Martha Burdick 808
Newcome John A 2083
Newcomer Paul William 224
Newell Jay W 448
Newlove Joseph T 224
Newman Myron Albert 1059
Newmark Philip 1740
Noble William Lincoln 1830

Noecker Charles Benjamin 1923
Noebren Arthur Groman 1923
Nolte Harry Frederick 1739
Nook Edward Joseph 448
Norfleet A L 224
Norris Richard C 808
Norton Chaucey Williams 521
Noster Alfred H 1740
Nugent Edward Genung, 447

O

Oberbeck August F G E 1831
O'Brien John Patrick 1293
O'Connell James E 224
O'Connell Maurice Wm 1652
O'Connor Francis William 1830
Oden Pope Webb 1058
O'Hanlon Philip Francis 890
O'Kelly Harry H 521
Oldham Samuel P 808
Olson Richard Bartlett 1830
Oliver Paul Preston 1924
Oliver Walter Holmes 1831
Olsen Roger Ralph 727
O'Neil Daniel Charles 223
O'Reilly Joseph Patrick 890
Osborn George Knox 1831
Osborn James William 520
Osborn Eva St Clair See Barber Eva St Clair Osborn
Otto Charles J 1293
Ouellette Clifford Joseph 223
Overholser Geo Whitefield 1215
Overholser Milton P 808
Overton Edward Milton 1140
Owen William Wellington 1293

P

Page Frank Theodore 1469
Pancoast George Ramsdell 448
Parent Wm Harrison 1740
Parish John Kimball 223
Parker Edward Ernest 1293
Parker Samuel Flowers 1831
Parker William Riley 971
Parriott Robt Phil 1739
Parris Daniel 1740
Pastene Albert Angelo 1831
Palchin Charles Vernon 520
Paterson Russell Stephen 1380
Pattengill Lemuel Fitch 2084
Patterson Samuel J 448
Patterson William O 1380
Patterson William Preston 808
Paul Judson Waldo 1831
Payne Albert Eugene 808
Payne Oscar Corwen 1468
Peart Thomas Wellesley 971
Peck Walter William 727
Peckham Anson Churchill 1740
Peebles Robert Emory 1740
Peel Alfred John 1469
Peery John Thomas 2155
Penn Benjamin Stillwell 2084
Penn Thomas Jefferson 1460
Penrod Harry Hartzell 223
Peppers Guy Stewart 224
Perdue William Robert 2003
Perkins George Ben 1059
Perry Arthur Rutherford 1169
Peterskin Guy Shearnan 1140
Peters Arthur Otway 1468
Peterson George Ernest 292
Peyton Susan Dora Wilson 521
Phelan Daniel 448
Phillips David Barringer 2083
Phillips James R 880
Phillips Robert Hazlett Cummings, 727
Phillips Walter Andrus 1380
Pierce John Woodward 64
Piersen Samuel 292
Pigeon James Cogswell Du Maresque 521
Pinch James W 224
Piper Frank 1380
Plimpton William Merrill 1380
Porter Clifford Charles 1141
Post Frank Smith 1559
Pothulise Peter Jurjens 890
Potter Frances Wason 971
Powell Everetto Lewis 971
Powell James Buchanan 1652
Power Clarence Lamoline 20
Powers Julius Henry 1293
Pozer Richard Bruce 1559
Prescott William Herbert 147
Preston Melvin George 1923
Prevost Jules Louis 2003
Price Harvey Alexander 890
Prichard James Buchanan 521
Pruitt George A 1141
Pugh Joseph Raymond 1559
Purple Robert Huse 521

Q

Quick Paul Alexander 1293
Quila William Everett 2083
Quinn Charles Fuller 727
Quina Harry John 150

R

Raaf John J 224
Rabe Frederick Louis 521
Raborn John David 1380
Race William Franklin 1559
Ragan George W 2084
Rains Jesse Lewis 2084
Ramer Edwin Clyde 971
Randall Floyd Hamilton 1923
Rankin Horace R 224
Rafter Claude B 2084
Ravn Michael 2084
Rawolle Frederick Carl Jr 890
Rawson Charles David 890
Raymenton William Hewstone 1924
Redmond Henry 1215
Reed James Joline 2084
Reed Jesse McCampbell 2084
Reed William Edward 1379
Reeve John Charles 224
Reeves John E 2084
Reid Winfred Lee 889
Relley Isaac H 374
Reller Albert S 2084
Rejebian Hagop H 224
Rejne Frank Ageton 890
Rendell Matland W 1469
Restenberger Adolph Martin 1380
Reynolds Belle Loomis 1469
Reynolds George Edward 889
Reynolds Walter 292
Rice Clark Hilton 521
Rice Clyde Vernon 1739
Rice Daniel Stephen 1058
Rice Frederick Winslow 1739
Rice Gordon Warren 521
Richardson Waldo Henry 521
Richie Emory Wallace 1379
Ridgway Alexander 293
Rienhoff William Frederic Andrew George Sr 1558
Riley Charles 1141
Risser Frederick William 604
Roach Frank Lehigh 1469
Robb Sarah Lucretia 521
Robbins Chas Albert 1739
Robbins Clifton Z 1923
Roberts Charles Joseph 2004
Roberts George Francis 890
Roberts John 223
Roberts John Adam 1059
Robertson Leon Clarke 1924
Robertson Lon Clarke See Robert son Leon Clarke
Robertson William Melville 1558
Robinson Edward Clay 224
Robinson Everett Edwin Sr 223
Robinson Frank Crawford 1379
Robinson Herbert Abraham 1924
Robinson Plato W 890
Robinson Wm Colladay 1652
Rogers Alvin Stackhouse 521
Rogers Arthur Walters 970
Rogers Frank Willingham 1380
Rogers Thomas C 150
Rook Charles Wesley 292
Rooney Robert William 224
Root Edward King 1468
Ross Alexander A 1379
Ross Oran Welborn 1740
Roth George Henry 1740
Rothman Lewis 521
Rowe Henry David 521
Roy Charles Dunbar 373
Royce George Irwin 1652
Rudd William Edward 223
Rue Henry B 224
Ruffin George M 521
Runyan Edward Alexander 604
Rupp Paul H 292
Russell Stephen Alrah 1141
Rutherford Cyrus 447
Rutherford Lord 1734
Rutherford J Anthony 2083
Ryan William Spencer 1831
Ryans Lewis 2084
Ryburn Samuel McChesney 2083

S
St Clair James Scott 224
Salley Francis Eugene 2083
Salmon Norley Cuthbert 150
Salter Peter Harold 1739
Salus Henry Wieder 1058
Samenfeld Joseph 1923
Sample James Monroe 224
Sams William Mead 2084
Sanders Daniel M 1924
Sanders James Samuel 1059
Sanger Samuel E 64
Sarpallus John W See Sarpollis John W
Sarpollis John W 1924
Saunders Duncan L 2084
Savage William Edwin 223
Savard Arthur Joseph 520
Sayre Robert William 1923
Sayrs John H 224
Scanlon Joseph Michael 889

Schaeff Hermann Ernst 1559
Schaeffer John Henry 447
Schieffelin Lila Gertrude 890
Schleier Frank J 1830
Schleyer Carl R 1920
Schmidt Irwin Henry 1924
Schmucke Roy Alvin 521
Schnauss Friedrich Wilhelm 224
Scholl Joel Buford 2084
Schwindt Louis William 889
Scofield Richard Jessup 293
Scott James M 521
Scott James Patrick Edward 1740
Scott John 2084
Scott Wm Russell 1739
Sebastian S Powell 1059
Secor William Lee 1923
Seldel Albert N 448
Selgenhauer George M 1559
Sellers George Frederick 224
Selby Frederick Sumner 1924
Selman Julius Jay 223
Settle James Berkley 521
Severance Cyrus Job 521
Sewell James Atkin 890
Sexauer Chas F 1651
Seymour William Henry 1141
Shadrach William Carr 2004
Shaffer Carl William 292
Sharpe Richard Wickham 293
Shastid William Edwards 224
Shaw John W 1469
Shaw Joseph B 520
Shaw Viola E See Terwilliger Viola E Shaw
Shaw William James 971
Sheen Rodman Ellison 1469
Sheffield John Wesley 1740
Sheldon Benjamin L 808
Sheldon Smith Victor 293
Shelton George W 1652
Shenberger William Jacob 1830
Shenboudy James A 292
Sheildan William Florence 971
Sherman Florence Augusta 971
Sherrill Colte Long 1058
Shider George Porter 2084
Shimansky Clarence Augustus 2003
Shimazono Juniro 289
Shipman Frank Edmund 292
Shipman Thomas Harris 1740
Shippey Roland Hall 1469
Short Joseph Malcolm 292
Shotts Charles C 293
Shubalter Ulysses W 1652
Shube Herman 1215
Sigler Claude Le Baron 520
Silvers Edward Warren 447
Silvera Edward Samuel Jr 1831
Simmons George Henry 807
Simpson James Knox 603
Simpson Wyatt Farmer 890
Sitman George Womock 970
Sitton John W 2084
Skiff George Stephen 1058
Skinner George Coleman 970
Slaght Carrie Estella 224
Slamovitz James 604
Small Anna May Allen 1831
Small Richard Dresser 1651
Small Nathan 224
Smille Arthur Laphorn 603
Smith Carlton A 727
Smith Charles Russell 971
Smith Delmar H 1652
Smith Don La Motte 1740
Smith Edgar Bronson 292
Smith Frank Ware 293
Smith George Edward 970
Smith Howard Milton 292
Smith James Frank 1141
Smith John Harris 1740
Smith John Milton 2004
Smith Jonathan Mackie 604
Smith Munford 889
Smith R E Lee 970
Smith Sheffield 1831
Smith S B 1468
Smith Thomas William 2003
Smith Victor Sheldon See Sheldon Smith Victor
Smith Weston Olin 2084
Smith William Francis 604
Smith Woolam Ira M 1058
Snow Robert Lee 1924
Snowden Alexander Odell 1830
Solley Frank Deming 293
Sommer Henry J 1058
Sossoman John C 1469
Southard Jefferson D 603
Sowers John H 1559
Spalding Samuel Hopkins 1651
Sparks Henry Thomas 293
Speaker Everett Elmer 1830
Spear Raymond 2083
Spencer Hazelton 1059
Spencer John Blair 292
Spencer John Campbell 1140
Sperry Wade 2084
Spies Siegfried 1468
Spohn William N 971
Sprenkel Vaughan LeRoy 971

Sprigge Sir Squire 367
Stafford Rolla Baxter 373
Stamm John 1831
Stanley Gordon Edward 727
Statham O W 727
Stauffer Gilman Wayne 2084
Stebbins Nehemiah Irving 2083
Steele William H 971
Steen Thomas Enoch 727
Steenken Charles Daniel 1468
Steeves Ernest Colpitt 293
Stemen William E 2004
Stenton David Kenneth 374
Stephenson Nellis Francis Witter 520
Stevens David 293
Stevens Henry Lee 1831
Stevens Bayard Taylor 727
Stevenson Charles Eldridge 1923
Stewart Alexander Peter 1469
Stewart Ambrose Cecil 1380
Sticklely William Downing 292
Stiebeling Alfred Henry 1141
Stiles S W 293
Stirling William C 1831
Stoddard Edwin D 604
Stoker William Allen 1550
Stone Alvin Bernard 150
Stone Augusta 64
Stone Chester Tilton 1558
Stone Fred G 1380
Stone Russell Edward 223
Stone William Ridgely 293
Stooksbury Jacob Marion 1059
Stork Frederick 2004
Stovall George Edgar 1059
Strayer Robert F 293
Strobel Robert George 1293
Strong Elmer Dwight 1831
Striker Ralph Spencer 604
Sturgell George Morton 1830
Sturges Benjamin Franklin Jr 293
Sullivan Daniel Thomas 727
Sullivan James M 1469
Sullivan Jeremiah Barrett 1923
Sullivan Welly L 1059
Summerlin John Morris 604
Summers John William 2083
Surname Isaac 292
Sutter Otto 1558
Sutton Nelson Ford 1831
Swango Overton Hobart 1830
Swayze Orrin Hays 971
Swedenburg Francis Gustavus 1468
Sweet Earl Bertrand 726
Swope William A 727
Sylvester Charles Porter 1559

T

Talbot Mathew Lyle 1293
Talbot Richard D 1559
Talbot William Robert 1024
Tallmadge Andrew Thompson 1380
Tallmadge Felix Marcus Tully 2083
Tanner Clarence William 2084
Taylor Claude L 1141
Taylor Fletcher Burr 1468
Taylor Roscoe John 521
Taylor William Calvin Sr 1469
Teague Mary Englebert 1831
Ten Eyck John Francis 521
Tenney Arthur 1559
Tenney Thomas J 1924
Terry Pleasant E 374
Terwilliger Viola Elzada Shaw 293
Thacker Richard Emmett 374
Thames Thomas J 1924
Thane Benjamin 970
Thomas Alfred Harold 373
Thomas Charles Neade 1468
Thomas Cullen O 2155
Thomas Robert Arthur 293
Thomason William 727
Thompson Frank H 1379
Thompson George 2083
Thompson on George Southwick 1379
Thompson Lloyd Orrin 1141
Thompson Thomas C 1831
Thomson J G (Prof) 720 966
Thomson John 727
Thomson Walker Sir John W 1532
Thornely Josiah Payne 1293
Thuner Alois Anthony 727
Thurmann Otmar 1924
Tillotson Alvin G 203
Timbres Harry Garland 727
Tipton James T 971
Toner Joseph Michael 520
Tousey Sinclair 2003
Townsend Charles Rodman 727
Townsend Harman Richard 374
Trout David William 727
Troute Fore H 727
Trowillion Milo H 1380
Trowbridge Dwight Howe 148
Trudeau J W Raphael 604
Tubb Erastus Hardy 889
Tucker Charles W 1923
Turner James Henry 2155
Tyson Ja on J20

U
Underwood John Elijah 890

V
Vanden Berg Joseph 971
Vanderbeek Andrew Bogeri Jr 1058
Van Deursen George Liresey 292
Van Alrk Herbert Spencer 970
Vaughan Ray 1141
Vawter Jamison 1924
Vermillion Carl McLain 1830
Vernon George Hleywood 1141
Vigen Jorgen G 604
Vincent Henry Ansel 0.1
Vogans James Enoch 2155
Volet Simon 1739
von Krehl Ludolf (Prof) 370

W
Wade Charles Albert, 1739
Wade Lyman Trevitt 373
Wagner George Alexander 889
Walcott Harry Gilmer 970
Walker Albert B 293
Walker Herbert Le Roy 1559
Walker Robert Coulter 1559
Walker Robert R 293
Wall Albert Samuel 2004
Wall Charles Delamere 1652
Wallace Rufus Moos 727
Wain Emma C See Goodman Emma Comly Wain
Walters Alvin Ernest 1050
Ward Daniel Webster 1379
Ward Harriett Beecher 2084
Ward John Wesley 293
Warmuth Mitchell P 889
Warren Arthur Fay 1739
Watkins Charles B 150
Watkins Edward Merriett 150
Watkins James Edwin 1380
Watkins William W 604
Watson James Edwin 604
Watts Anti Costa 2004
Watts George Elliot 604
Wayt William Baldwin 1380
Weaver Jacob J Jr 203
Weaver Thomas Albert 2084
Webb Harvey Edmund 808
Webb Lanphear W 1141
Webster George F 2003
Webster George Wickliffe 1141
Webster Oran Lamar 1469
Wedemeyer Edward Lee 1059
Weldman John A 603
Welmar Henry William 1831
Welser Walter Rupert 292
Welch Joseph Frank 1652
Welch Oliver Harry 604
Welch Walter C 293
Wellman Warren D 2083
Wendelboe Lars Thomas 293
West Alva Archilious 1141
West Helen 1831
Weston William Henry 1559
Whaland Charles W 604
Whall Oscar D 2004
Wheeler Arthur Charles 2003
Wheeler Joseph Suley 1559
Wherry Calvin Norwood 1215
Whetsell Leon Edward 1830
Whitaker Hervey Williams 1141
White Gershon Franklin 292
White Herman Robert 604
Whiteaker William J 1380
Whitely James Benson 293
Whittenberg William Clayton 1215
Wietrzynski Stanislaus F See Wietrzynski Stanley F
Wietrzynski Stanley F 1141
Wigley James Arthur 292
Wilbur Fred N 1059
Wilder Rosella Cynthia 1831
Wilhoit Miley Jasper 150
Wilkinson John E 1141
Wilkinson Vernon Stevens 1831
Williams John Walter 1831
Williams William E 1469
William Charles L 2004
William Reinhold 890
Wills Chalmers See Wills Wm Chalmers
Wills William Chalmers 1924
Wilson Cleveland Roy 374
Wilson S Dora See Peyton Susan Dora Wilson
Wilson Samuel 2155
Wilson Warren 2003
Wilson William Wellford 601
Winfield Alonzo Leonidas 1059
Winslow Amos Iluram 971
Winslow John Randolph 223
Winslow Nathan 1830
Wirt Ilfram II 293
Wisely J W 2155
Wiseman Charles Sumner 293
Wisnietek Frank Jo eph 293
Wolf Omar K 604

Wolfe Samuel 873
Wolter Herman Alvin 1880
Womack Charles Marion 1050
Wood D J 61
Wood Samuel Clifford 64
Woodbury Ernest Irving 293
Woodcock William Cleveland 1141
Woodland George Hart 1460
Woodmansee John Austin 1379

Woodruff Harry Walter 293
Woodward Samuel Andrew 603
Workman John Alfred 727
Worthen Charles Wesley 1830
Wright Austin Charles 1059
Wright Flora Allison 2004
Wright Junius B 1141
Wright Nathaniel Van Wert 077
Wright Willard Lyman 1024

Y

Yerlington Henry Herbert 1830
Yonmans George E 293
Young Claude V 292
Young Frank P 1141
Young Isaac W 890
Young John Roscoe 150

Z

Zeh Joseph William 604
Zell Augustine Nathias 373
Zieg George Arthur 604
Zieg John Phillip 1141
Ziegler Charles Benjamin 604
Zimmerman Charles St V 1831
Zimmermann John S 2083
Zook Erle Will 374

E

E & J Resuscitator [Martinez] *489 [Heender son] 1051—C [Huribut] 2157—C
EAGLES Fraternal Order of See Index to Organization Section
EAR See also Deafness Eustachitis Hearing Otiorhinolaryngology
discharge perforate Shrapnell's membrane with vertigo on syringing 600
diseases use of urea in [Levy] 1232—ab
Inflammation of Middle Ear See Otitis Media
perforation of external auditory canal, 2000
middle effect of flight on in pilots [Armstrong & Helm] *417
phenomenon as precursor sign of measles [Bespaloff] 748—ab
Surgery See Mastoidectomy
EASTMAN Clinic See Dental
ECHINOCCOSIS See Heart Liver
ECLAMPSIA predisposing factors in 588—E
sequels [Teel] 821—ab
treatment [Rucker] *1087
treatment calcium 1050
treatment magnesium sulfate [Stroganov] 916—ab
ECONOMICS, MEDICAL See also Insurance Medical state index to Organization Section
Care of Indigent See Medical Service
New Zealand government to pay doctors at rate of £1 per head annually 1291
survey report California 1993
ECHYMA or facillious dermatitis 2010
ECTROPION See Eyelids
ECZEMA atopic 2010
blood serum lipids in 510—E
in infants [Foerster] 990—ab
in infants acquired milk with high fat content in [Traversaro] 542—ab
treatment artificial sun lamps 1063
ECZEMATONE Eczematone Ointment 2156—BI
EDELMAN GALTON whistle use 154
EDEMA See also Ascites Ankle
angioneurotic epinephrine inhalations in [Kilaeftel] *1788
angioneurotic (Quincke's) bee venom desensitization for [Wolpe] 1409—ab
general of indeterminate etiology [Binger & Kelth] *1
Lymphedema See Elephantiasis
nephrotic ascites therapy [Lands] *2030
non nephrotic in scarlet fever [Zischinsky] 1090—ab
protein deficiency [Boyer] 1854—ab
treatment by multiple punctures [Sein] 2170—ab
EDOUARD S B Acidophilus Compound 2085—BI
EDUCATION See Children school Physical Education Schools Students University Physical See Physical Education
EDUCATION MEDICAL See also Graduates Internships Schools Medical, Students Medical University
A V A Council on See American Medical Association
Annual Congress on 1913
between two extremes 1006—ab
course length of *664
curriculum *664
graduate courses (U of Minnesota) 962 (for panel physicians England) 966 (Ohio State Medical Association lectures) 1050 (5 year program California) 1913
graduate instruction (reorganized at Tulane) 364 (of radiologists) [Kirklin] *633 (in ophthalmology) [Parker] *1262 (in nephrology control work) 2071—E
graduate (New South Wales) 724 (New Zealand) 1956
graduate study International Congress on Berlin 1554
graduate U S and Canada annual presentation of data on *659
nephritis and chance findings 336—ab
number August 28 '37 *659
of general practitioners 597
premedical education *659 *664
teaching allergy Association for Study of allergy committee report 964
teaching (clinical) clinic university hospitals agreement Rome 1348
teaching (clinical) no cooperation between 12 hospital staffs London 1825
teaching industrial medicine France 722
teaching natives in the Colonies 1375
teaching radiology to undergraduates [Pen degrass] *634 [Moore] *637
teaching student what involves adequate medical care [Bailey & Weiskotten] *2136 2141—E
teaching urology [Barnes] *640

EDUCATION MEDICAL—Continued

three fundamental subjects dissecting room deadhouse and clinic 203—ab
EDWENIL (Council report) 272 (animal experiments with) [Stainsby & Shultz] *273 280—E
EFFUSION See Pleura
EGG shells calcium in 77
EHRICHS (Dr) nostrums 1925—BI
ELBOW trauma xanthoma tuberosum with in tile setter [Sugg & Stetson] *414
ELECTRIC Arc Welding See Welding
Hearing Aids See Hearing
Refrigerator See Refrigerator
ELECTRICITY hemiplegia after shock 895
ELECTROCARDIOGRAM See Heart
ELECTRO ENCEPHALOGRAPH See Brain
ELECTROLYSIS for removal of hair on nipples 2161
ELECTROLYTES effect on chronaxy of ves tibular nerve [Hurjowicz] 94—ab
ELECTROSURGERY High Tension 207
ELECTROTHERAPY books on 895
ELEPHANTIASIS lymphedema of leg 729
EMBALMING See Medical Abstracts at end of letter M
EMBOLISM See also Thrombosis
air (arterial) after pneumothorax [Hall] *125 [Poliv] 395—ab
air cause of pleural shock [Capps] *852
air experimental gas [Richardson] 310—ab
air to spinal cord after pneumothorax [Walker & others] *430
brain vascular reactions in [Villaret] 2107—ab
Gas See Embolism Air
of arteries of extremities 1735
postoperative [Bancroft] 2017—ab
pulmonary 1277 [Barnes] *1347
pulmonary incidence [Pfleger] 1317—ab
pulmonary postoperative calcium chloride prophylaxis [Muff] 831—ab
treatment 1736
EMBRYO See also Fetus
optical reflex mechanism in [Windle] 1938—ab
EMBRYOLOGY animal processes Spemann on 1827
EMERALD OIL Moones 728—BI
EMERGENCIES stores of serum for Germany 602
EMERGENCY RELIEF See also Index to Organization Section
merged with state agency New York 513
EMERSON Infant Respiator 131
EMETINE intolerance to [Lorenz] 2108—ab
EMOTION bodily needs and 1337—ab
factor in asthma [Strauss] 1317—ab
factor in chronic arthritis [Cobb] 1153—ab
factor in health and disease [Swanton] 394—ab
healers and emotional strain 1529—ab
mechanism [Papez] 1668—ab
EMPHYSEMA obstructive and atelectasis in influenza [Snow & Cassasa] *1886
EMPIRE Rheumatism Council 1998
EMPLOYEES See Hospitals Industrial
EMPYEMA peripneumonic [Kautz] 78—ab
skeletal deformities in children from [Bisgard] 1077—ab
treatment sulfanilamide [Gay] 2100—ab
ENCEPHALITIS See also Meningo Encephalitis Polioencephalomyelitis
acute unusual symptoms [Loeper] 89—ab
Chronic See Encephalitis Epidemic
clinic (first German) 1055
lead in children [Blackman] 824—ab
symptoms from influenza virus [Neal] 1490—ab
track [Hoff] 244—ab
ENCEPHALITIS EPIDEMIC in patients having had poliomyelitis [Hilme] 1494—ab
outbreak Missouri 1461
sequels atropa belladonna in parkinsonism 519
sequels atropine dosage in [Hall] 172—ab
sequels benzedrine sulfate atropine treatment [Finkelman & Shapiro] *344
sequels parkinsonism type 525
sequels phenobarbital contraindicated in parkinsonism increases rigidity [Ziskind & Ziskind] *20
ENCEPHALITIZOON granulomatous encephalomyelitis due to [Wolf] 1399—ab
ENCEPHALOGRAPH See Brain
ENCEPHALOMYELITIS See also Polioencephalomyelitis
granulomatous due to encephalitozoon [Wolf] 1399—ab
ENDARTERITIS Obliterans See Arteriosclerosis obliterans

ENDO S death Endo's Medium 289
ENDOCARDITIS See also Medical Abstracts at end of letter N
bacterial rheumatic fever role in [Gross] 1847—ab
pneumococcal 1743
staphylococcal superimposed on syphilitic aortic [McWilliam & Wilbur] *1194
treatment of stubborn form 1655
ENDOCRINE GLANDS See also under names of specific glands
function of liver 1647
neuro endocrine apparatus 2153
relation to sterility and abortion [Litzenberg] *1871
research Marble Foundation grant to National Research Council for 216
treatment of amenorrhea [Frank & others] *1863 (correction) 1997
treatment of cystic mastitis [Lewis & Gschikter] *1894
treatment of menopausal phenomena [Pratt & Thomas] *1875
treatment of menorrhagia and metrorrhagia [Burch & others] *1890
treatment of vaginitis [Lewis & Adler] *1873
treatment ordinary or enteric coated products 973
tuberculous infection and [Schedtler] 914—ab
ENDOMETRIOSIS See Endometrium aberrant
ENDOMETRIUM aberrant of colon and rectum with intestinal obstruction [Cattell] 745—ab
cyst of uterosacral ligament (rare) [Israel] *574
cystic changes [Randall] 2103—ab
trauma and infection from pessary [Cholssier & Notes] *1628
ENDOTHELIOMA See Myxo endothelioma
ENERGY Metabolism See Metabolism basal
ENGINE See Diesel Engine
ENGLISH See British Royal
ENTERECTOMY See Intestines surgery
ENTERIC Coated Products See Endocrine Glands
ENTORAL (Council report) 208 1130—E (detail men promote) [Richer] 1026—C
ENURESIS See Urination incontinence
ENVIRONMENT See also Climate
effect on inherited characters case of twins Germany 287
factors in rheumatoid arthritis [Cobb] 1153—ab
EOSINOPHILIA 453
after intravenous oil injections [Engelbreth Holm] 472—ab
in pericarditis nodosa 453 (reply) [Sandler] 977
in unusual illness [Thomson] 910—ab
EOSINOPHILS length of life of [Osgood] *933
EPHEDRINE chemical formula *2065
hydrochloride Ampoules Solution 1365
Sulfate See Asthma treatment
Treatment See Urination incontinence
EPIDEMIC See Dysentery, bacillary Fm cephalitis Epidemic Gastro Enteritis in influenza Paratyphoid Typhoid yellow fever etc
EPIDERMOCOSIS torch oil dermatitis relation to [Kammer & Callahan] *1511
EPIDIDYMIS oxidation ferments from for ml grain in women [Zalleck] 94—ab
EPIDIDYMIS treatment 380
tuberculous and eolius 377
EPIGASTRIC pain attacks 1837
EPIGLOTTIS herpes zoster [Franchini] 91—ab
EPILATION See Hair removal
EPILEPSY diagnosis 227
diagnosis (possible) 1219
genito urinary tract syndrome in 1744
German neurologists discuss 2157
muscleogenic [Critchley] 171—ab
onset mode [Pettersen] 1668—ab
psychotic blood bromide in [Minsk] 2170—ab
Selzures (Therapeutic) See Dementia Praecox
surgical aspects [Gilbert] 1158—ab
treatment antirabic virus 391
treatment ketogenic diet in children [Kaltit] 2169—ab
treatment phenobarbital anemia duralag [Wallard] 2023—ab
EPINEPHRINE chemical formula *2065
drugs antagonistic to 229
effect on blood pressure [Cilli] 94—ab (cause hypertension?) [Dicker] 991—ab
in blood See Blood
inhalations See Edema angioneurotic

- EPINEPHRINE**—Continued
 injected, disappearance in animal body, [Weinstein] 827—ab
 injection glycemia and ketonemia after [Anders] 749—ab
 injection in vaginal plastic operations [Furber] 2106—ab
 injection (intratracheal) after tracheotomy [Green & Miller] *1903
 probe test [Muck's], [Van Dishoeck] 2110—ab
 serologic antibodies against hormones [Bauer] *1442
 Treatment See Edema angioneurotic Labor complications Malaria chronic
- EPININE** chemical formula *2065
- EPIPHYSIS** femoral osteochondritis of 1296
- EPISTOMY** See Labor
- EPITHELIOMA** pigmented basal cell, [Gate] 469—ab
- EPSOLIN** 2156—BI
- ERGOT** fungous infection of grain ergotism and vasomotor disorders [Hein] 390—ab
 use and abuse of [Davis] *1631
- ERGOTAMINE TARTRATE** See also Valgraine treatment
 ergotism, papaverine hydrochloride for [Perlow & Bloch] *27
- ERGOTISM** See Ergot Ergotamine tartrate
- ERTHRON** 132
- ERUPTION** See Erythema
- ERYSIPELAS** treatment sulfanilamide [Breen] 626—ab, [Snodgrass] 1159—ab, [Marzoldi] 1765—ab
- ERYSIPELOID** or fish poisoning 152
- ERYTHEMA** nodosum [San Joaquin Valley or desert fever] caused by Coccidioides [Dickson] 86—C 1757—ab
 of ninth day and arspenamine dermatitis [Sprafke] 1239—ab
 toxic from guanine or scarlet fever eruption? 1385
 toxic or bullous impetigo? 1383
 unilateral of face in infant 1747
- ERYTHREMA** See Polycythemia
- ERYTHROCYTES** chemical content [Holt and cholesterol] in pernicious anemia 434—E
 of one human organism would form chain 200 000 kilometers in length 446
 Sedimentation See Blood
 size [Freerksen] 1677—ab
 volume index use of Daland Van Allen and Wintrobe hematocrits 450
- ESMARCH'S** Method See Uterus surgery
- ESOPHAGUS** dilatation hiatalogenic [Strauss] 396—ab
 diverticulum (pulsion), surgical management [Lahay] *1414
 diverticulum (traction) [Wallace] 1487—ab
 roentgen study mucosal pattern technique and kymographic records [Skinner] *1963
 spasm (simple nonsphincteric) [McGibbon] 626—ab
 varices [Oppenheimer] 1667—ab
- ESTROGENS** 1376
 effect on anterior pituitary and diabetes mellitus, 1657
 effect on prostate [Champy] 912—ab
 in urine daily excretion [Gallagher] 1670—ab [Kenyon] 1670—ab (in children) [Dorfman] 2169—ab
 in urine suggested test for cortical adrenal cancer [Frank] *1121
 International Medical Days discuss 1210
 ketonic and nonketonic, [Westerfeld] 1312—ab
 progeny and progeny B treatment of involutional melancholia [Suckle] *203
 theelin effective clinical dosages [Werner & others] *1027
 theelin in hemophilia in Negroes, [Pachman] 538—ab
 theelin treatment of involutional melancholia [Schube] 1312—ab [Ault & others] *1786
 treatment of amenorrhea [Frank & others] *1863 (correction) 1997
 treatment of chronic cystic mastitis [Lewis & Geschickter] *1894
 treatment of infantile uterus 1838
 treatment of prostate hypertrophy [Wugmels] 628—ab
 treatment (oral) to premature babies [Potter] 747—ab
- ETHER** Anesthesia See Anesthesia
- ETHICS MEDICAL** See also Index to Organization Section
 medical patents [Fishbein] *1539 [Scarlet Fever Committee] 1833—C
 professional secrecy Hippocratic oath and social insurance France 517
- ETHMOID SINUSES** Injuries [Calms] 1856—ab
- ETHYL acetate ethyl silicate** Industrial hazard [McConnell] *765 *767
- dETHYLENE DIOXIDE** (dioxane) (Industrial hazard) [McConnell] *765 (chemical formula) 1725
- ETHYLENE GLYCOL** chemical formula 1725
 feeding experiments with rats [Holck] *1717
 mono ethyl ether of Industrial hazard [McConnell] *765
- dETHYLENE GLYCOL** chemical formula, 1725
 Elixir of Sulfanilamide Unssengh [Ideaths from] 1367—E, 1456—E *1538, *1539
 1544—E *1725 1727—E [Secretary of Agriculture] *1985 1992—E, (renal lesions from) [Kessen & others] *1509 (Chemical Laboratory series) *1531 *1724 (chemical examination) [Schoeffel & others] *1532 (toxicity studies on rats) [Gelling & others] *1532, (pathologic effects) [Canon] *1536 [Ruprecht & Nelson] *1537 [Hagebusch] *1537 [Beall] 1561—C
 1911—E, [Reichter] 1926—C
 feeding experiments [Holck] *1517 [Gelling & others] *1532
- ETHYLENEDIAMINE**, action of theophylline with on intrathecal and venous pressures, [Green & others] *1712
- ETSAM** 1060—BI
- ETCALINE** (Regular) 2085—BI
- EUGENICS** See Medical Abstracts at end of letter M
- EUNUCHOIDS** excretion of androgenic and estrogenic substances [Kenyon] 1670—ab
- EUSTACHITIS** 2082
- EVANSTON** Municipal Pertussis prophylactic vaccination clinic [Sauer] *487
- EVEREADY** Carbon Arc Lamp 1042
- EVIDENCE** See also Medical Abstracts at end of letter M
 expert witness psychiatric element in criminal jurisprudence 1057
- EVIPAL** See Anesthesia
- EVOLUTION** Sir Edward Poullon surveyed controversy on 1135
- EWING'S** Tumor See Tumor
- EXANTHEM** Drug See Arspenamine Quinone Sulfanilamide
 In gonorrhea [Levin] 1939—ab
- EXERCISE** See also Athletics Physical Education Running Swimming
 after nephrectomy 2090
 effect on metabolism [Hald] 1579—ab
 fever in childhood due to [Hawke] 825—ab
 in pulmonary tuberculosis [Voute] 1675—ab
 Knee Chest See Uterus retrodisplacement
 Passive Vascular See Blood Vessels disease
 Tolerance test See Heart function
- EXHAUSTION** See Fatigue
- EXHIBIT** See Health Index to Organization Section
- EXOPHTHALMOS** after thyroid resection 1747
 complicating irradiation of malignant nasal sinus disease [Sehall] *1506
 thyroid surgery effect on [Dinsmore] *179
- EXPECTORANTS** [Brown] *268
- EXPLOSION** See also Anesthesia
 toxic gases from dynamite and from TNT, 1217
- EXPLOSIVES** dangerous amateur fireworks also from gasoline 965
- EXPOSITION** See Cleveland, Golden Gate, New York, Paris
- EXSERO** Antiseptic Deodorant Disinfectant 2095—BI
- EXTREMITIES** See Amputation Arms Legs
- EXUDATES** antibacterial effect [Hughes] 1674—ab
- EYELIDS** ectropion, correction 2160
 ptosis surgical correction [Spaeth] *1889 [Jameson] 1937—ab
 seborrhic dermatitis 810
- EYES** See also Blindness Cornea Exophthalmos, Glasses Nerve optic Ophthalmology Orbit Retina Vision Medical Abstracts at end of letter M Index to Organization Section
 blue inheritance, 455
 burns (caustic) [Hubbard] 1231—ab
 diseases possible syphilitic involvement [Berens & Goldberg] *779
 disorders, effect of weather, 1738
 effect (late) of mustard gas on war injury 516
 foreign bodies (metallic) lodged in posterior segment 969
 fundus angloid streaks in [Benedict] *473
 fundus lesions in polycythemia [Cohen] 79—ab
 injuries compensation in 894
 paralysis of ocular muscles autohemotherapy [Campos] 2108—ab
 quinine not cause of rotary oscillation of eyeball 610
 refraction astigmatism 2088
 refraction correct cylinder for distant vision 1659
 sensitivity to colored light especially to colored street lights 442
 sequels of meningitis [Eagleton] 823—ab
 Silver Nitrate instillation See Ophthalmia neonatorum
 solutions buffering 377
 spots before [Vusac volantes] 523
 vitamin A deficiency sign in dark adaptation test [Ezickson & Feldman] *1706
- FACE** See also Lips Mouth Nose
 care after shaving [Hollander & Casselman] *48
 erythema (unilateral) in infant 1747
- FACE**—Continued
 furuncle treatment, 278—E (reply iodine and dry dressings for) [Cummins] 1061—C
 growth (normal) in children [Young] 1404—ab
 infections of dangerous areas [Maes] 617—ab
 injuries automobile [Stralib] *910
 Paralysis See Paralysis
 parasthesia 155
 surgical removal of powder tattoo [Lindsay] *1530
 surgical treatment of spasm [Coleman] 165—ab
- FACTORY** See Industrial
- FACULTY** of Medicine Buenos Aires 148
 1139 2002 (Illustration) 2082
 of Medicine Paris (chair of medical social aid) 1289 1648 (Tiffeneau dean) 2050
- FAINTNESS** See Syncope
- FALL** effect on pelvic organs 71
- FALLOPIAN TUBES** abscess effect on upper urinary tract, pyelographic study, [Kretschmer & Kanter] *1097
 inflammation (acute) cutaneous hyperesthesia in [Labate] 1316—ab
 obstructed in sterility diathermy and in salutation for [Mintz] 821—ab
- FAMILIES** large allowances for France 1648
- FARMER** swindler in western states 1645
- FASCIA**, hernia sodium morrhuate injection for [Schmier] *28
 late relation to back conditions fasciotomy, [Ober] *544
- FASCIOTOMY** See Fascia
- FASTING** ketosis during [MacKay] 1660—ab
- FAT** See also Acid fatty Acid lactic Oil
 absorption from ileum [Doubilet] 165—ab
 atrophy Weber Christian disease, [Bailey] *1419
 diet (higher) vs increase in diabetes [Susskind] 631—ab
 Glands See Sebaceous Glands
 in Blood See Blood
 metabolism disorders after splenectomy, [Zan] 318—ab
 Reducing See Obesity
- FATHER** Mollinger's Famous Herb Tea Prescription for Female Complaints 1741—BI
- FATIGUE** benzidine sulfate effect in chronic exhaustion [Wilbur & others] *549, (Council report) *2068
 metabolic rate (low) with, 811
 nature 879—E
- FATISM** hemolytic anemia [Hutton] *1618
- FECES** Clostridium welchii especially in pericolic anemia [Bordnick] 65—ab
 coproporphyrin [Beckerman] 1767—ab
 diphtheria bacillus in patients [Clantini] 1083—ab
- fat** in pituitary caecemia with idiopathic stenorrhea [de Langen] 398—ab
 fat in, symptomatic stenorrhea in cancer etc [Lundsteen] 834—ab
 hypercholela in infantile bronchopneumonia [Galeotti Flori] 318—ab
 vitamin A in [Wendt] 1321—ab
- FEDERAL** Communications Act See Medical Abstracts at end of letter M
 Emergency Relief See Emergency
 Home Loan Bank See Index to Organization Section
 Trade Commission See also Index to Organization Section
 Trade Commission, food and drug legislation 1546—E
- FEDERATION** of American Sanatoria, name changed 514
- FEEBLEMINDED** See Mental Defectives
- FEES** See also Index to Organization Section
 capitulation England 218
 higher medical syndicate recommends France 369
 Tullion See Schools Medical
- FEET** See Foot
- FELDVAN** Method See Vitamin A deficiency
- FELIX'S** Antitypoid Serum See Typhoid
- FELLOWS (Dr)** Headache Powders 1653—BI
- FELLOWSHIPS** See also Scholarships
 Buenos Aires 2002
 Flannery Howard Research Foundation, 1643
 French bequest for at Columbia 594
 Jacob (Mary Putnam) 594 1823
 Medical Research Council 441
 National Research Council available 1552
 Navy 2074
- FEMASEPT** 1653—BI
- FEMAL GENE** Antiseptic Tablets 1925—BI
- FEMUR** boring or boring of neck in coxa vara [Dreyfus] 241—ab
 fractures of shaft [Ellason] *848
 osteochondritis of epiphysis 1206
 tumor Ewing's [Smith] 1073—ab
- FERRON'S** Hair Grower and Tonic 1653—BI
- FERRON** China De Angellis, 1653—BI
 China Doria 1741—BI
- FERRUS** Sulfate Treatment See Anemia nutritional
- FERTILITY** See also Sterility
 number of births to a marriage [Cadwallader] 150—C
 of parents of feeble-minded Switzerland 895
 period of potency in man 891

- FETUS** See also Embryo Infants New Born growth short waves effect on, 1180 induced to drink by sweetening amniotic fluid [Do Snook] 397—ab membranes insulating patches and absorbable suture made from [Johnson] 538—ab mortality antepartum care [Tamlis & Clair] *195 mortality in breech delivery, [Urnes & Timmerman] *1616 Position See Labor Presentation See Labor presentation thyroid hyperplasia in twin, [Warren & Shpaler] *515
- FEVER** See also Dengue Rheumatic Fever Saddle Fever Scarlet Fever Typhoid Yellow Fever etc diagnosis in boy 2158 in childhood from exercise [Hawke] 825—ab Malta See Undulant Fever of unknown origin or possible malingering 453 producing agent in infusion fluids [Co Tui & others] *200 protracted with septal infarct [Lanbury] 175 —ab Puerperal See Puerperal Infection Q In meat workers Brisbane [Derriek] 186—ab Rat Bite Fever See Rat Bite Fever reaction to sulfanilamide [Hagman & Blake] *642 Rickettsia See Rickettsia Rocky Mountain Spotted See Spotted Fever San Joaquin See Lrythema nodosum seven day or leptospirosis Queensland [Clayton] 627—ab Therapeutic See also Arthritis Chorea Colitis ulcerative Gonorrhea Malaria therapeutic therapeutic albumin in urine after [Welty] *41—ab therapeutic apparatus Council requirements 1041 1044—E therapeutic Beck Lee De Luxo Duo Therm 439 therapeutic brain lesions after [Hartman] *1116 therapeutic in children [Speker] 2100—ab therapeutic induced by hot moist air shock in [Fopp] 1800—ab therapeutic instrument for reading rectal temperature [Blerman] *867 therapeutic research at Pittsburgh 1286 Valley See Erythema nodosum
- FIBROVA** See also Myxofibroma ovarian Meigs syndrome [Rhoads & Terrel] *1684
- FIBROSIS** See also Bone Marrow nerve irritation from after wrist operation 68
- FIBROSITIS** See Rheumatism muscular
- FILENE EDWARD A** will 1373
- FILMS** See Motion Pictures
- FILTRATION** adsorptive also ultrafiltration of infusion fluids to remove pyrogen [Co Tui & others] *230
- FLA ST Brand Tomato Juice** 277
- FINGARD DAVID** 704—E
- FINGERS** See also Hand Nails anomalies three phalanges on each thumb 371 dactylitis from pushing back perungual nail (s manicule) [Nicholas] 395—ab dermatitis between 226 fractures of ungual phalanx [Perschl] 320 —ab infections [Koch] 109—ab occlusion of digital arteries 1566 overgrowth (local) [Chandler] *1411 ridges on genetic studies 1376
- PINK S Magic Oil** 728—B1
- FINNEY HOWARD** Foundation See Foundations
- FINOCHIETTO MIGUEL ANGEL** death 2002
- FIRE** See Buras
- FIREWORKS** dangerous amateur England 965 Fourth of July injuries from *1806 1818—E
- FIRST AID** See Spine fractures
- FISCHERQUARTZ** Cold Mercury Arc Lamp 503
- FISCHERTHERM** Short Wave Diathermy Unit 272 (Super) 2064
- FISH** See also Halibut Oil See Cod Liver Oil Liver oil poisoning or erysipioid 152 workers spirochetal jaundice 1123—E
- FISTULA** anorectal (recurrent) preventing [Best] 1580—ab menstrual [Malpanti] 829—ab neck and true branchiogenic cyst [Meyer] 1831—ab pancreatic diet for 381 Pyloricoblit from perforating duodenal ulcer [Roberts & Hadler] *1629 vesicovaginal treatment [Andre] 1407—ab 2000
- FITZ REGINALD H** biography 2077
- FLATULENCE** distention and house dust asthma, 392 distention distress in [Frazier] 389—ab
- FLEISCHMAN'S YEAST** not eligible for list of accepted foods Council report 276
- FLEISCHMAN MARCO** bequest 1133
- FLIES** See also Maggot therapy Myiasis Sandfly transmit undulant fever [Negroni] 1084—ab
- FLIGHT** See Aviation
- FLOCCULATION** Reaction See Streptococcus hemolytic Tuberculosis serodiagnostics
- FLOGGING** See Children punishment
- FLORIDA** elimato for rheumatic fever patients [Jones] 1308—ab Medical Association protest against federal regimentation 511
- FLOUR** brands accepted 277 1127 1201 1455 vitamin B₁ and B in wheat and rye bread and flour 1034
- FLOWERS** removal from sickrooms at night 379
- FLUIDS** Body See Body fluids Infusion See Injections Intravenous physiologic availability in secondary shock [Davis] 1313—ab
- FLUORISCENCE** Microscopy See Microscopy
- FLUORINE** in water aluminum sulfate removal [Kemp] 1157—ab in water chemical removal [Elvove] 1581 —ab in water supplies New Mexico 881 tolety 1929
- FLU** See Flies
- FOCH** Foundation See Foundations
- FOLLUTEIN** See Gonadotropin Principles
- FOOD** See also Diet Infants feeding Nutrition Vitamins Index in Organization Section Allergy See also Milk Onions allergy [Rinkel] 1489—ab allergy causes hypertension [Liston] 466—ab allergy identifying foods causing 591—E allergy leukopenic index [Long] *23 [Denny] 622—ab 2006 A M A Council on See American Medical Association canned microbiology [Jones] 315—ab canned (nonacid) processes for in metal containers 1046—E common units of measurement and tables of vitamin content 1204—E contaminated with poison gases 1291 1820 craving for celery liver and salt diagnostic importance 1566 dehydration and electrical refrigeration 1386 Dyes See Oranges fungi growth in not pathogenic to man 300 banders physical examination (Maigne) 53 (South Dakota) 283 mineral oil in effect on vitamin A utilization Council report 1814 poison gas effect on 1291 1825 Poisoning See also Botulism poisoning by staphylococci [Timmerman] 1590 —ab poisoning from cream custard cakes [Gelger] 466—ab poisoning from cream pastry filling New York 282 594 1994 supply nation's Germany 1212 syphilis infectiousness from 435 U S Food and Drug Administration to regulate naming compounds 715—E (legislation) 1546—E
- FOOT** See also Ankle Legs Nails Shoes Toes Acrocyanosis See Cyanosis bathing (contrast) use of hose instead of buckets [Kurtz] 1654—C callus and corns on blisters resulting from radium treatment 1064 care in chronic arthritis [Kuhns] *1108 deformities talipes equinovarus in infant 610 disorders in general practice [Morton] *1112 gangrene (impending) from ergotamine tartrate treated with papaverine hydrochloride [Perlow & Bloch] *27 shufflo foot 1930 strain (bilateral) from short Achilles tendon 1220
- FOOT AND MOUTH DISEASE** virus [Gallo] 993—ab
- FORANEN** Intervertebral diseases [Oppenheimer] 239—ab
- FOREIGN BODIES** See Eyes Heart
- FOREIGN FACILITIES** See Schools Medical
- FOREIGN GRADUATES** See Graduates
- FORESKINS** as skin graft [Ashley] 1231—ab
- FORMOSAN** Imperial University Dr S Mita president 1921
- FORT WESTERN** Brand Pineapple 277
- FOSSAY LEE** data on Antitularemic Serum Mulford 504
- FOULDS** Macaroni Spaghetti 1637
- FOUNDATIONS** See also Index to Organization Section Air Hygiene 1733 A M A resolution on psychiatric research by 41 American proposals for medical care 32—E 1280—E (self appointed committee as outgrowth) 1728—E 1816—E Bernard (Leon) offers prize 1375 Blaustein fund for educational purposes 1549 Chemical Inc president dies 1915 Commonwealth Fund to build hospital Utah 283 Daland (Judson) 1551 Finney Howard Research fellowships 1645
- FOUNDATIONS—Continued** Foeh changes name to Medical Foundation of Mount Valerian 58 (opens hospital) 1825 Friedsam report of Child Neurology Research 140 Good Will Fund E A Filene will 1373 Guggenheim scholarships for Brazilians in U S 1466 Hecksher opens new departments 2075 International Cancer Research, Mr Donner gives funds for 1644 Markle grant for endocrine research 216 438 Mayo (Dr Balfour named director) 139 (Mayo home to be used for educational purposes) 718 National Foundation for Infantile Paralysis 1997 Nemours (bequest of A I Du Pont) 281 Rackham Fund to study rheumatism 962 Rockefeller (gift to U of Minnesota) 53 (gift to Rumania) 726 (malaria project Florida) 960 (annual report) 1208 (Dr Eaton's appointment) 1285 (work in Hungary) 1291
- FOUR LEAF** Clovers 2156—B1
- FOURTH OF JULY** injuries first annual summary second series *1806 1818—E
- FOX FORDICE DISEASE** 2161
- FRACTURES** See also Femur Fingers Jaws Spine etc blood phosphatase and phosphorus (plasma) in [Peden] 171—ab bone formation in promoting 608 clinic organization 368 Colles See Radius Committee of British Medical Association report 57 in children, [Bisgard] 1672—ab pathologic [Ghormley & others] *2111 treatment (adequate) in rural hospitals [Hammond] *407 treatment maggot bone regeneration after [Simon] 1758—ab treatment magnesium alloy bone splints report on 967 treatment surgical intervention 1737 Ununited See also Clavicle fractures Radius ununited simplified technique of onlay grafts [Harkins & Phemister] *1501
- FRAMBESIA** control of yaws [Saunders] 308 —ab relation to syphilis [Turner] 462—ab [Holcomb] 1742—C treatment bismuth compounds and neoarsphenamine 455 treatment rhodium [Jahnel] 177—ab
- FRANCIS EDWARD III** with relapsing fever 367
- FRANK ROBERT TILDEN** American Journal of Obstetrics and Gynecology honors 215
- FRANK WILLIAMS** Lecture See Billings
- FRASER WILLIAM** Uden Tablets 605—B1
- FRATERNAL** Order of Eagles See Index to Organization Section
- FRAXINELLA** See Dictamnus
- FREDET RAMMSTEDT** Operation See Pylorus stenosis
- FREEZING** swelling and discoloration not signs of death from 1209
- FRENCH** Academy See Academy Gynecologic and Obstetric Congress 1999 Gynecologic Congress (sixth) 599 Hospital Congress (first) 2150 Hygiene Congress 24th meeting 369 League Against Rheumatism (International Congress) (International Day) 287 720 1051 1212 Ophthalmologic Congress 2151 Orthopedic Congress meeting 1137 Otorhinolaryngologic Congress 42nd 287 2000 Society of Dermatology and Syphilology prize 965 Soviet Conference 59 Surgical Congress 1735 Urologic Association 2079
- FRENUVI** labil See Lips
- FREON** used in air conditioning toxicity 1567
- FRESE** Hamburg Tea 1832—B1
- FRIEDRICH S** Modification See Pregnancy diagnosis
- FRIEDSAM** Foundation See Foundations
- FRONTAL BONE** Morgagni syndrome [Raso] 2024—ab
- FRONTAL SINUS** injuries [Cairns] 1856—ab
- FRUIT** See also Apple Peach Pineapple etc contaminated hazards 130—E Dried See Peach Fries Used on See Oranges products reaction of aluminum to 1055 Section Brand Fruit for Salad 1815
- FUEL OIL** See Diesel Engine
- FUNDUS** oculi See Eyes
- FUNGUS** See also Yeast flora of normal skins [Downing] 391—ab growth in foods not pathogenic to man 300 Infection See Actinomyces Grain Mycosis etc
- FURFURALS** industrial hazard [McConnell] *766
- FURUNCULOSIS** of face treatment 278—E (iodine and dry dressing) [Cummins] 1061 —C
- FUSEL OIL** industrial hazard [McConnell] *765

G

- G & B Brand Pineapple Juice 359
 GAENSLEN FREDERICK J orthopedic school named after 1916
 GALLBLADDER See also Bile Bile Ducts Biliary Tract
 calculi blives after dye test for 153
 calculi intestinal obstruction from [Cameron] 80—ab
 cholesterol in walls of variation 371
 disease (chronic) importance of earlier operation [Niemeler] 1851—ab
 disease pancreatic juice as etiologic factor [Volfer] 393—ab
 disease (stoneless) cholecystectomy for [Kunath] *183
 inflammation cholecystitis [Abell] *1243
 inflammation (chronic) vs irritable colon [Wilkinson] *1012
 opacification by black bile [Fliessinger] 830—ab
 perforation in late pregnancy [Stone] *1903
 surgery liver deaths [De Courcy] 618—ab
 surgery postoperative care [Payne] *1436
 surgical excision in typhoid carriers [Coller] 165—ab [Lynn] 1403—ab [Elsom] 1755—ab
 CALL DUCTS See Bile Ducts
 CALLSTONES See Gallbladder calculi
 GANGLION (tumor) of tendon sheaths treatment by puncture [Bearsse] *1626
 of wrist 1929
 GANGLIONEUROFIBROMATOSIS of mesentery with malignant degeneration [Jentzer] 541—ab
 GANGRENE See also Foot Medicolegal Abstracts at end of letter M
 Diabetic See Diabetes Mellitus
 gas prevention with formol toxoids [Penfold] 911—ab
 gas treated by complete delimitation in healthy tissue [Borchard] 997—ab
 gas treated with sulfanilamide [Bohman] *254 (effect on *Bacillus welchii*) [Bliss & Long] *1524
 of skin [Meleney] 150—C
 GARBAGE fed hog and trichinosis [Hall] 746—ab
 GARRISON FIELDING H (Interest in history of medicine) 1035—ab (music and) 1245—ab [Billings Osler Welch and] 1353—ab (request letters of) [Sigerist] 1834—C
 GARVAN FRANCIS P death 1915
 GAS butane gas stoves necessity for effective flue in 155
 Embolism See Embolism air
 Gangrene See Gangrene
 mine effects 975
 Mustard See *di*Chloro Ethyl Sulfide
 Plant See *Dictamnus albus*
 poisonous in industry hydrogen sulfide 516
 toxic from dynamite and TNT explosions 1217
 warfare air attacks (London's water supply in) 516 (national school for protection Belgium) 596 888 (precautions against England) 884 1825 (gas masks distributed England) 1052 (gas proof shelters in hospitals France) 1054 (protection of food) 1291 1825 (mask for babies England) 1918 (English government and precautions against) 2078
 warfare delayed action blindness due to in World War 516 1647
 GASOLINE danger of domestic use 965
 GASTRECTOMY See Peptic Ulcer surgical treatment Stomach surgery
 GASTRIC Analysis See Stomach acidity
 Juice See Stomach secretion
 Ulcer See Peptic Ulcer
 GASTRIN [Boiler] 321—ab
 GASTRITIS See Stomach inflammation
 CASTRO ENTERITIS outbreak New York 214
 GASTRO ENTEROLOGY International Congress (second) 1373 1553
 International Society of A.M.A. invites to U.S. 48
 GASTRO INTESTINAL TRACT See also Digestive Tract Intestines Stomach etc
 disease heterogenous transfusion in [Ryss] 1410—ab
 disorder latent syphilis in [Cannon] *349
 disorder not related to vacuoles in lens 1744
 perforation [Bergh] 1078—ab
 portal of entry in poliomyelitis [Toomey] *402
 GASTROSCOPE See Stomach
 GAY 2156—BI
 GEDDES AUCLAND See Index to Organization Section
 GELATIN Dunn's Diamond D Brand 1637
 GENERAL ELECTRIC Ultraviolet Lamp 1988
 GENETICS new developments Germany 287
 GENITAL SPOTS See Nose
 GENITALS See also Penis Vagina etc
 infection of lower tract in young girls 1728—E
 tumors rectoscopic differentiation [Schicyer] 321—ab
 GENITO URINARY TRACT disorders from spina bifida occulta [Berril] 1238—ab
 GENITO URINARY TRACT—Continued
 syndrome epilepsy with 1744
 tumors (primary malignant) in children [Campbell] *1606
 GENIUS Vaporine Ointment 1653—BI
 GENIUM VIOLET Treatment See Burns
 GEORGETOWN University new Brain Research Institute at 1284
 GERIATRICS Sec Old Age
 GERMAN Anatomical Society meeting 1824
 Army See Army
 Japanese Medical Society founded Tokyo 518
 Measles See Rubella
 Orthopedic Society Congress 1737
 Persecution See Jews
 Red Cross See Red Cross
 Society of Pathology 2152
 Society of Surgery congress of 145
 CERMANNIA Herb Tea 375—BI
 GERMANIN (Bayer 205) cortical necrosis of adrenal after [Wells & others] *490
 GERM V 1060—BI
 GESELSCHAFT der Aerzte of Vienna celebrate centenary 446
 GESTONI DIACINTO A M A resolution on 250th anniversary 44
 GIARDIASIS See Lamblasis
 von GIERKE'S DISEASE See Glycogen storage disease
 GINGIVITIS See Gums Inflammation
 GIRLS basal metabolism of 106 healthy school girls Boston 715—E
 GITALIN (Amorphous) NNR 2141
 GLANDS See Endocrine Glands Lymphatic System Salivary Glands Sebaceous Glands etc
 GLANDULAR FEVER See Mononucleosis in fections
 GLASS man exhibit of 445
 GLASSES contact lenses 977
 correct cylinder for distance vision 1659
 unbreakable lenses Tufca 1384
 GLAUCOMA acute and chronic mechanics in 1744
 Bjerrum's scotom 229
 surgical treatment [Woods] 1403—ab
 toxicity of atropine by mouth 813
 GLENDORA Brand Tomato Juice 133
 GLIOMA treatment roentgen effects on surrounding tissue [O Connell] 1080—ab
 GLOMERULONEPHRITIS See Nephritis
 GLO MORE Shampoo 1925—BI
 GLOMUS Tumor See Angliomomoma
 GLOSSODYNIA See Tongue painful
 GLUCOSE See Dextrose
 GLUE bone infective warts in workers from [McLaughlin] 1857—ab
 GLUTAL REGION See also Buttocks Thigh superior coccygodynia and pain in [Thiele] *1271
 GLYCERIN feeding experiments [Holcl] *1517
 GLYCEROL See Glycerin
 GLYCERYL trinitrate biliary colic relieved by [Walters & others] *1591
 GLYCOGEN liver effect of yeast on [Drill] 1853—ab
 storage disease cholesterol metabolism in [Beumer] 750—ab
 GLYCOLS industrial hazard [McConnell] *765 956—E
 GLYCOSURIA Renal See Diabetes Renal transitional in coronary thrombosis 1829
 GOAT billy goat which gives milk 1658
 Milk See Milk
 Serum See Hyperthyroidism
 GOITER See also Hyperthyroidism
 blood chemistry in thyroid crisis [Maddock & others] *2130
 endemic heredity 806
 heritability 1919
 prevention iodized salt effect on goiter operations [McClure] *782
 prevention iodized salt used in boarding school 300 *2130
 sporadic and endemic Rumania 290
 treatment conservative and operative 220
 types (four) 220
 GOITER EXOPHTHALMIC effect of inorganic iodine combinations and of diiodotyrosine on [Krogh] 1590—ab
 in young children [Crile] 1397—ab
 liver involvement [Retzlaff] 1409—ab
 nutritional factors [Veans] 1668—ab
 psychosis and [Bram] 1233—ab
 surgery morbidity in [Dinsmore] *179
 treatment of thyrotoxicosis rôle of diet [Weyler] 1768—ab
 treatment roentgen [Raagaard] 178—ab
 treatment surgical [Kämmerer] 1321—ab
 GOLD Bridgework See Teeth
 dermatitis changes in finger nails after [Beinfante] 398—ab
 Salt Treatment See Arthritis chronic Tuberculosis Pulmonary treatment
 Seal Vegetable Compound for Women 1832—BI
 Sodium Thiosulfate Abbott 507
 GOLDE Chemical Compound 1832—BI
 Gate Exposition (San Francisco) health exhibit at 1287
 GOLD TEX condom urethritis from 2009
 GOLF American Medical Golfing Association tournament (Atlantic City) 141 (San Francisco) 1916
 GONADOTROPIC PRINCIPLES 1376
 antigenicity of hormones 362—E
 antophysin antuitrin S follutein and A P L 1146
 antuitrin S intradermally as a test for pregnancy [Schneider & Cohen] *115
 antuitrin S treatment of acne [Williams & Nomland] *564
 effect on anterior pituitary and diabetes mellitus 1657
 follutein antuitrin S etc and tuberculosis 136—E
 prolactin progesterone mechanism and vitamin E [Young] 314—ab
 rôle in amenorrhea [Frank & others] *1863
 syncytial reaction in endometrial trauma and infection [Cholsser & Notes] *1828
 treatment of adiposogenital dystrophy [Plum] 1768—ab
 treatment of infantile uterus 1838 2090
 treatment of intentional uterine hemorrhage 526
 treatment of undescended testes [Dahl Iversen] 834—ab [Hess] 1759—ab
 treatment of undescended testes not advised in patients under 5 733
 GONADS hypogonadism anterior pituitary therapy plus thyroid extract in children [Jacobsen & Cramer] *101
 GONOCOCCUS septicemia in new born [Hoffman & Schneider] *1447
 septicemia with purpura and arthritis fever therapy [Hazel & Snow] *1275
 GONORRHEA See also Venereal Disease
 Arthritis See Arthritis
 blood sedimentation rate in [Baandk & others] *1257
 control (public health) public needs in [Paran] 1576—ab
 control work graduate instruction in 2071—E
 diagnosis effect of menstruation [Puggis] 2172—ab
 diagnosis in men laboratory methods evaluated [Carpenter] *1428
 diagnosis of cure in nurse when may she attend patients 1385
 in young girls 1728—E
 involvement of Skene's glands and cervix diagnosis treatment 1743
 menstrual pain and cure of 1837
 or nonspecific urethritis 1386
 penis plastic induration after 2089
 possible and prostatitis 1065
 problem in U.S. [Vonderlehr & Usilton] *1425
 second attack of 1927
 sequels 518
 skin eruptions in [Levin] 1039—ab
 treatment alpha rays [Nagell] 630—ab 1162—ab
 treatment antgonococcus serum vaccine and filtrate [Keefer] 164—ab
 treatment combined heating technic in women [Bierman] 821—ab
 treatment cure in women 1837 [Wharton] 2098—ab
 treatment fever in men [Parson & others] *18 [Ballenger & others] *1037 [Warren & others] *1430
 treatment sulfanilamide [Reuter] 238—ab [Ballenger & others] *1037
 treatment sulfanilamide in pregnancy 527
 GOODRICH CHARLES H See Index to Organization Section
 GOSWISCH S Garlic Tablets 1653—BI
 GOUDY S Magic Liniment 1741—BI
 COWANS Preparation 2085—BI
 GRABILL S (Dr.) Prescription No 1313 200—BI
 GRADUATE Education See Education Medical
 GRADUATES average age—1937 *672 *673
 by sex *669
 by states *667
 in U.S.—1905 1937 *671
 Negro *671 *672
 of faculties of medicine abroad examined—1930 1936 *675
 serving internships *668
 with baccalaureate degrees *670
 GRAFTS See under Heart Skin
 Only See Bones
 GRAIN fungus infection relation to vasomotor disorders [Klein] 390—ab
 GRAINALEFA 1060—BI
 GRAIN S (Dr.) Grandmother Medicine 2137—BI
 GRANULOCYTOMA Sec Angina agranulocytic
 GRANULOMA See also Lymphogranuloma cnecephalomyelitis from cnecephalitozoon [Wolf] 1399—ab
 lycopodium after using anal suppositories [Antopol & Robbins] *1192
 talcum powder [Flenberg] 744—ab
 GRANULOSA Cell Tumor See Ovary tumors
 GRANZOW S Tonic Tablets 1832—BI
 GRASS or its juice growth factor in milk [Kohler] 989—ab
 Pollen Extract See Hay Fever treatment
 GREFF ARTHUR J See Index to Organization Section
 GRIFF rouge toxicity 813
 GRIGG S Great Blood Tonic 1741—BI
 GRIL See Influenza

GROUP HEALTH Association Inc See Index to Organization Section
GROVE'S Laxative Bromo Quinine Tablets Emulsified Nose Drops radio program 716
-E
GROWTH See also Bones Dwarfism Infants effect of diet [Watson] 003-ab effect of milk 068 factor in summer milk (grass or grass juice) [Kohler] 989-ab local overgrowth [Chandler] *1411 mystery of 1056 normal facial in children [Young] 1404-ab
GUAIACOL Treatment See Lungs abscess
GUGGENHEIM Foundation See Foundations
GUMS See also Jaws Pyorrhea inflammation mercury for [Grove] 1580-ab inflammation sensitivity to podophyllum 155
GUNPOWDER See also Medicolegal Abstracts at end of letter M
tattoo surgical removal [Lindsay] *1530
GYNASIUM new Japan 887
GYNECOLOGY See also Obstetrics American Association of Gynecologists and Nurses new annual prize 1016 American Board of examinations 284 1287 2076 Central Association of Gynecologists (prize) 1641 (meeting) 1645 continuous drip transfusion in [Winterton] 626-ab French Congress 599 1999 International Congress of 1373 lesions effect on upper urinary tract pyelography [Kretschmer & Kanter] *1097 lesions to syphilis [Cannon] *354 National Congress of (proposed) to be held in 1939 217 psychotherapy in 1366-E
GYPTOL 2005-BI

H

HAIR See also Alopecia Scalp combs (celluloid) ignite burns from [Fox] *1978 dyes dermatitis from (Oloxo) 286 (Cloral) 2009 dyes heena and indigo in 813 dyes pseudo leucism not due to henna poison tag possibly to trinitrophenol 1146 excessive hirsutism [Mencher] *1338 grisly use of vitamin B complex in restoring natural color to 976 permanent wave hair discoloration after if scalp treated with mercury [Siemens] 02-ab permanent wave seborrhea of scalp in women 450 Removal See also Shaving removal from nipples by electrolysis 2161 removal depth dose in epilation irradiations [Proppe] 471-ab tonic 813
HALES Phosphate of Soda Compound 1741-BI
HALIBUT vitamin A in viscera (excluding livers) [Loren] 1406-ab
HALL'S Cancer Medicine 1653-BI
HALLUX Valgus See Toes
HALOWAN toxicity 1386
HAMMOND'S Rotenone Insect Dust possible toxicity 1836
HAND See also Fingers Nails Wrist Acrocyanosis See Cyanosis infection from human bites [Maler] 1399-ab infections to meat handlers 975 infections of palm [Koch] 169-ab ridges on genetic studies 1376 swellings 1063 Tar Dermatitis to protect from industrial irritants 71
HANDICAPPED See also Blind Crippled Deafness children illhoods (clinic for) 138 (division for) 798
HARRISON NARCOTIC ACT See also Medical legal Abstracts at end of letter M internal use of opium preparations defined 440
HAWLEY'S Ointment 2085-BI
HAY FEVER during and after cinchophen jaundice [Boros] *113 etiology Spanish moss [Metzger] 1076-ab in the South 227 nervousness and insomnia in 454 placental (correction English and Rugel's) [Blumstein & Tuft] 606-C skin sensitivity and 1474 treatment desensitization (oral) 376 1472 treatment grass pollen extract [Harley] 315-ab
HEAD See also Brain Cranium Scalp deformity after childbirth 1743 injury cause of dizziness [Glaser] 742-ab injury changes in sensation in leg after 609 injury roentgen signs of sequels [Travers] 533-ab nod or nodding spasm 1747
HEADACHE See also Migraine after intraspinal anesthesia prevention [Marshall] 832-ab in hypotension 1065 postoperative [Koster] 619-ab

HEALCIDINE Health Salts 1832-BI
HEALERS and emotional strain, 1529-ab
HEALTH See also Hygiene Mental Hygiene Sanitation Index to Organization Section agencies study Colorado 716 album health pass Germany 517 American Association for 362-E American Public Health Association 1051 Benefit Societies Sea Insurance health campaign launched England 1374 1463 2078 center (New York) 215 439 1133 (new Japan) 887 Child See Children climate in relation to 34-E Column See Newspapers coordinator named Sen Rollins Ma 439 department Defeat case finding work in tuberculosis [Vaughan & Douglas] *771 department Louisville expanded 364 departments physician and the state Italy 1213 district (new) opened Maryland 1642 education in schools [Rogers] *842 (lectures in high school in) 1548 Education Institute 1051 Examination See Physical Examination exhibit (Cleveland Exposition) 215 (Vienna) 445 (New York's World Fair) 439 (Golden Gate Exposition) 1287 Insurance See Insurance International Congress of Public Health Officials 1290 laws on Italy 1378 ministry of (creation Belgium) 222 (annual report England) 2078 National Institute of See Health U S Public Health Service of young men during unemployment 136-E officers (district) examination for ill 592 public and preventive and industrial medicine [Bristol] *245 public features of rheumatic heart disease 959-E public service developments Germany 1212 Ray Twin Carbon Arc Sun Lamp 951 resorts German reorganization 370 state department (in new home Okla) 595 (new laboratory Mich) 1914 Statistics on See Vital Statistics Student Health See Students Medical Supervision See Industrial unit (new Nebraska) 1049 (county organized Iowa) 1548 U S department of establishment 32-E U S Public Health Service (health education activities) 142 (changes in) 217 720 1646 1824 (National Cancer Institute) 434-E (National Institute of Health) 883 (advisory committee on pneumonia) 1997 (syphilis control work) 2071-E (on health problem in Chinese war zone) 2142-E U S Treasury Department Appropriation Act grants in aid for public health work 597 vitamin A reserves in 590-E Wisconsin's hall of 1050 1131-E world health and League of Nations 2142-E
HEARING See also Deafness Nerves auditory aids Aurex 585 aids (electric) in school for deaf England 1919 aids value to child with speech difficulty 730 defective early detection and treatment in children [Newhart] *1620 problems in education [Newhart] *839 tests Council's requirements for audiometers 1812 tests use of Edelmann Galton whistle 154
HEART See also Arteries coronary Arrhythmia See Arrhythmia Heart rate athletics and [Cooper] 316-ab beat heterotopic stimulus formation [Bloch] 701-ab block (complete) in pneumonia and peritonitis [Swift & Smith] *2038 changes with uterine myoma [Dietel] 1084-ab compression due to pericardial scar roentgen diagnosis [Freedman] 821-ab cripple problem vs panic publicity and poll 957-E defects in childhood [Hecht] 2026-ab diphtheria (severe) effect on [Thompson] 235-ab Disease See also Cardiovascular Disease Endocarditis Pericarditis etc Index to Organization Section disease annual symposium on San Francisco 1284 disease attacks and indigestion 1297 disease clinical efficacy of digitalis preparations [Stroud & Vander Veer] *1503 disease complicating pregnancy [Consoli] 242-ab (obstetric problem) 1746 disease (coronary) prognosis [King] 83-ab disease death rates from 153 disease (decompensated) water exchange in lungs in [Calabresi] 1494-ab disease Gitalin (Amorphous) N N R 2141 disease hospital project for children Winne sota 438 disease in nutritional deficiency [Weiss & Wilkins] *785 disease in pregnancy [Tams & Clahr] *197

HEART-Continued disease inhalation therapy with oxygen also helium [Barach] 622-ab disease lectures on New York 1133 disease measuring blood pressure in pulsus alternans 1747 disease patients work for 1829 disease racket disability insurance fraud 34-E disease (rheumatic) [Rosenberg] 311-ab disease (rheumatic) in Philadelphia children [Cahan] 535-ab disease (rheumatic) public health features 959-E disease total thyroidectomy in [Singer] 752-ab disease toxic postpartal [Hull] 82-ab echinococcus [Wydrin] 998-ab electrocardiogram after work on cardiac function test [Nylin] *1333 electrocardiogram children's changes in [Drawe] 461-ab electrocardiogram effect of posture [Erkelens] 1678-ab electrocardiogram in bacterial toxin poisoning [Weber] 1944-ab electrocardiogram in diphtheria [Szezechlik] 752-ab electrocardiogram precordial leads in acute myocarditis [Mortensen] 544-ab electrocardiogram U wave in [Blumberger] 1409-ab electrocardiographic aspects of angina pectoris [Froment] 1764-ab electrocardiographic diagnosis in coronary occlusion [Wolfert] *1772 electrocardiographic differences in pulmonary embolism vs cardiac infarct [Barnes] *1350 electrocardiography in small children [Glendy] 985-ab embolism (left heart arterial air) [Hall] *125 Failure See Heart insufficiency foreign bodies (needle) [Rea & Hoover] *266 function tests volume determination electrocardiogram after work oxygen debt [Nylin] *1333 grafting vascularized tissues on to produce new blood supply [Fell & Beck] *1781 in bronchial asthma [Colton] 310-ab in pulmonary tuberculosis [Gosse] 171-ab infarction See Heart muscle Heart septum inflammation aortic and carditis [Taylor] 174-ab insufficiency action of theophylline with ethylenediamine on failure [Greene & others] *1712 insufficiency (left ventricular) treatment [Smith] *646 insufficiency ouabain orally [Livieratos] 1160-ab insufficiency physiologic bases of circulatory collapse 146 insufficiency roentgen aspects of interlobar fissures [Roubier] 1319-ab insufficiency total thyroidectomy for congestive failure 210-E (injury to laryngeal nerve) [Quinlan] 809-C [Young] 1295-C [Batson] 1562-C [Quinlan] 2087-C lesions due to blunt force [Munch] 322-ab murmur (functional systolic) in children [Diaz Nielsen] 1670-ab Muscle See also Myocarditis muscle hyperplasia and regeneration in children [MacMahon] 1847-ab muscle infarction complicates pregnancy [White & others] *803 of soldiers study of 519 output effect of posture [Sweeney] 1947-ab output measurement [Cooke] 1081-ab pains during splanchicotomies [Leiche] 748-ab phases can be photographed in sequence with telecard 969 pump constructed like human heart demonstrates blood circulation 445 Rate See also Tachycardia rate unsteadiness in psychoneurotic [Whitehorn] 823-ab role in growing old 1829 septum infarct with protracted fever [Laury] 175-ab surgery especially wounds ventricular lesions 1828 tamponade symptom in pericarditis [Shipley] *1017 throughout various periods of life [Willius] 81-ab tobacco [Golston] 1582-ab trauma and cardiac injury 154 tumors diagnosed before death [Smith] *1192 tumors epicardial coelothelioma [Andolf] 998-ab tumors metastatic neuroblastoma of right auricle [Doane & Sells Cohen] *78 Ventricular Failure See Heart insufficiency volume and stroke volume changes [Nylin] *1333
HEAT See also Cold Temperature effect in multiple sclerosis [Simons] 1400-ab effect of boiling on nutritive value of milk, [Graham] 909-ab

HEAT—Continued

effect on antiscorbutic value of vegetables [Levy] 1319—ab
produce fracture of skull and hemorrhage after death? 525
Regulation See also Metabolism basal regulation and vitamin C [Hasselbach] 1538—ab
Stroke See also Medicolegal Abstracts at end of letter M
stroke in workmen [Talbot] 392—ab
stroke salt tablets for—possible overdosage 972
Therapeutic Use See Gonorrhea
HEATING air conditioning A M A committee report [Yaglou] *945
effective flue in butane gas stores 155
HECKSHER Foundation See Foundations
HEIGHT See Body height
HEINZ Strained Beef and Liver Soup 359
HELIUM Inhalation See Heart disease
Respiratory Tract disease Tracheo
HELLERSTROM SVEN requests data on vene real lymphogranuloma 1208
HEVIANGLOMA treatment radioactive substances in [Müller] 1495—ab
unilateral erythema of face in infant 1747
HEMATEMESIS recurrent with splenomegaly 2151
HEMATOCRIT See Blood volume
HEVIATOMA posttraumatic juxtadural [Drehs] 994—ab
HEMATOPOIESIS HEMATOPOIETIC SYSTEM See Blood formation
HEMERALOPIA vitamin A and carotene utilization 1045—E
vitamin A deficiency and auto driving at night [Jeghers] *756 (correction) 965
HEMIATROPHY See Anis
HEMIPLEGIA See also Medicolegal Abstracts at end of letter M
after electric shock 895
HEMOCHROMATOSIS Iron metabolism in [Fowler] 1853—ab
HEMOGLOBIN Iron released by destroyed hemoglobin 279—E
HEMO LIVER 606—BI
HEMOLYSIS See also Anemia hemolytic Jaundice hemolytic
in nephritis in saponin systems [Herrald] 1845—ab
total tetanus with [Hall] 2021—ab
HEMOPHILIA in Negroes use of blood coagulant extract from placenta also theelin [Fachman] 538—ab
in women [Bauer] 93—ab
infected wound in morgue therapy [Pohle & Moddock] *2055
purpura with coagulation disorder simulating [Tachopp] 751—ab
treatment coagulation promoting substance from normal serum [Bendlin] 1846—ab
HEMOPTYSIS See Tuberculosis Pulmonary
HEM OREM 1925—BI
HEMORRHEGE See also Lungs Uterus etc
Medicolegal Abstracts at end of letter M concealed [Harkins] 619—ab
heat produce effect death? 525
prognostic value of radial pulse in transfusion [Fourestier] 913—ab
Purpura See Purpura hemorrhagica
treatment hemostatics 2010
treatment snake venom locally 598
vitamin K [Quick] 66—C
HEVORRHODICTOMY wound lymphopodium granuloma from using anal suppositories in [Antopol & Robbins] *1192
HEMOSTATICS See Hemorrhage treatment
HEMOTHERAPY autohemotherapy in psoriasis and herpes zoster [Barksdale] 1855—ab
autohemotherapy in ocular muscle paralysis [Campos] 2108—ab
autohemotherapy in syphilis [Baer] 1234—ab
HEVIROID 2085—BI
HENNA in hair dyes 813
poisoning pseudo icterus not due to 1146
HENOCH Purpura See Purpura fulminans
HENRY CLAY Roller Extract Flour 1455
HENRY S Deep Rock Oil 2156—BI
HEPATITIS See Liver inflammation
HEPATORENAL SYNDROME See Kidneys Liver
HERB NU Tonic 1060—BI
HERBS German Herb Tea 375—BI
HEREDITY See also Albinism Cancer Eyes blue Goltz Hyperthyroidism Paralysis aglans Rheumatism Thyroid etc
anlage effect 1649
in twins effect of environment Germany 287
neuropathic constitution and 1991—E
syndrome of hypoplastic patella malformed radius etc [Montani] 541—ab
HERMAPHRODITISM billy goat which gives milk 1658
pseudohermaphroditism orchidectomy be performed? 884
HERNIA See also Fascia Medicolegal Abstracts at end of letter M
development and large inguinal rings 974
direct and indirect length of inguinal ligament to decide [Harris & White] *1900
inguinal surgical technic [De Souza & Zazareph] 629—ab

HERNIA—Continued

scrotal right and undescended right testis 1931
symptomless in industrial worker 70
treatment injection 1456—E
varicocele not considered predisposing to 2009
HEROLES See also Martyrs
Fay (V G) beaten on answering call 594
Francis (Edward) III with relapsing fever 367
Freeman (J T) police surgeon attacked 440
HERPES See also Dermatitis herpetiformis
facialis with dendritic ulcer of cornea [Name] 624—ab
simplex (recurrent) smallpox vaccine treatment [Foster] 987—ab
zoster autohemotherapy [Barksdale] 1855—ab
zoster of epiglottitis [Franchini] 91—ab
zoster ophthalmicus posterior pituitary solution for 976
zoster pathogenesis in lymphatic leukemia [Schelker] 916—ab
zoster relation to chickenpox [Stern] 747—ab
zoster treatment vitamin B₁ 71
HERRIES W J fraudulent repair man 366
HEVALIN industrial hazard [McConnell] *764
HEXANONE industrial hazard [McConnell] *765
HEXYLRESORCINOL as urinary antiseptic [Walther] *1001
HIGH BLOOD PRESSURE See Blood Pressure
HIGH TENSION (Models CP—990 and HCP—990) 207
HILDEBRANDS Gall Stone Capsules 1832—BI
HILL A BRADFORD PRINCIPLES OF MEDICAL STATISTICS 713—E
HINDUS diet supplements (skimmed milk soya bean etc) [Akkroyd] 1081—ab
HINES BROWN Cold Pressor Test See Blood Pressure
HINTON Test (Davies Modification) See Syphilis serodiagnosis
HIP JOINT See also Pelvis Tibial arthritis (hypertrophic) 610
cava vara bolting or boring of neck of femur [Dreyfus] 241—ab
dislocation congenital 1657 1837
fixation [Trumble] 314—ab
lesions differentiation 2037
tuberculosis 1837
HIPURIC Acid Test See Liver function
HIRSCHSPRUNG'S Disease See Colon megalocolon
HIRSTISM See Hair excessive
HISTAMINE action exerted on general biologic action of x rays [Forata] 996—ab
histidine solution action on intradermal injection [Aron] 830—ab
in blood See Blood
injection intensifies allergy [Corelli] 1765—ab
test (double) to study peptic activity [Rivers] 903—ab
test of capillary circulation 1297
test of gastric secretion 1565
tolerance test of respiratory function [Schlosser] 1767—ab
HISTIDINE antagonistic to epinephrine 229
histamine solution action on intradermal injection [Aron] 830—ab
Treatment See also Peptic Ulcer
treatment clotting time of blood after [Bloch & others] *204
HISTORY Patients See Case Records
HOBBSON S (Dr) Whooping Cough Syrup 1925—BI
HOEBER PAUL B dies 718 (firm to continue) 1733
HOG garbage fed and trichinosis [Hall] 746—ab
HOLBROOK S India Koff kure 1653—BI
HOLFORD S Inhaler 1925—BI
HOMATROPINE accidental use of scopalamine for [Dameshek & Felsilver] *561
HOMEOPATHY state board reports (Maryland) 382 (Connecticut) 456 1749
HOMOSEXUALITY See Sex perversion
HONEY Grove Brand Syrup 359
HOOLE Dr death 61
HORDEOLA treatment quinine locally [Robinson] 990—ab
HORDER Lord on physician of the future 1824
HORMONES regulations International Medical Days discuss 1210
aerologic antibodies against complement fixation reaction [Bauer] *1442
Sex See Androgens Estrogens Gonadotropin Principles Hormones
HOSPITALS See also Sanatorium Medicolegal Abstracts at end of letter M Index to Organization Section
activities Vienna's growth of 600
admission of nonindigent Belgium 1465
American Hospital Association 391b annual convention 801
American of Paris needs financial help 516
Approved See Hospitals registered
bequests and donations 56 141 234 883 2076
Beth David dedicated 1550

HOSPITALS—Continued

British missionary services to wounded in China 1289
cancer Memorial Hospital 513
cardiac project for children Minnesota 438
Carli Chagas of Rio de Janeiro opened 1467
charitable physicians on staffs Germany 518
Charity New Orleans work begins on 512
Chicago Fresh Air changed to Birchwood Park Sanitarium 133
City See Hospitals municipal
commission (new) Dr Barrett director Michigan 1820
Commonwealth Fund to build Utah 283
Cook County therapy (blood preservation) [Fantus] *128
Federal Regulation See Medicine state
Foch Foundation (changes name) 3 (opening) 1825
for American Indians Arizona 1048
for Chronic Diseases on Welfare Island, New York 1371
for Joint Diseases (residency available) 513 (staff appointments) 1643
for Negroes first state owned Maryland 881
French Congress (first) discuss social laws and hospitalization 2150
gas proof shelters in France 1054
insurance committee to study Wisconsin 1823
Isolation for contagious disease 295
Isolation wards (scarlet fever) reinfection causes complications [Allison] 173—ab
Knickerbocker (N Y) 75 years old 283
life spirit of 113—ab
military surgical work in 1921
municipal Boston City Dowling unit completed 881
municipal Cleveland City centennial 1644
municipal of London 1647
municipal on 8 hour day New York City 282
nationalization of public hospitals New Zealand 1291
noturopathic fake drive solicitors sentenced Philadelphia 1133
North Mississippi Community opened at Tupelo 1549
nurseries outbreaks of highly fatal diarrhea in New born [Rico & others] *475
osteopath suit hospital upheld 1643
pledge to must be paid court decision N Y 882
Presbyterian N Y acquires property 215
psychiatric named for late Dr M A Bliss St Louis 799
psychiatric new at Runwell Essex 368
psychiatric number of patients doubles in 20 years Illinois 1993
psychiatric started Kentucky 593
psychiatric (state) status changed Ann Arbor 1049
psychiatric syphilis in 1062
Reading memorials at 1915
registered by A M A 72 *683 *693 715—E 2091
rural adequate fracture treatment in [Hammond] *407
St Elizabeth's (Dr Overholster to superintendent) 1132 (openings for physicians) 1462
St Luke's new x ray department 1460
service (free) abuse of Paris 144 885
service (free) and votes for politicians France 1210
sit down strikers New York City 719
staff intercommunication with students London 1825
staff vacancies examination 148
state new board for Virginia 595
state new buildings dedicated Massachusetts 512
statistics Germany 1213
United Hospital Fund 1731
veterans annual report 56
ward Paris named for Dr Chevalier Jackson 1648
Wesley work begins on Chicago 52
HOUSE dust asthma and abdominal distention 892
HOUSING See also Rooms
Inadequate widespread existence France 113
HOWARD FINNEY Foundation See Foundations
HULBERT'S Brand California Lemon Juice 537
HUMIDIFICATION artificial [Yaglou] *91f
HUMIDITY deficient factor in asthma [Farlati] 1579—ab
electrical refrigeration and dehydration of food 1386
HUNGARIAN Ointment 606—BI
HUNGER See Fasting
HURST ARTHUR knighted 57
HYDATIDIFORM Mole See Uterus
HYDROCARPATES Treatment See Lupus vulgaris
HYDRAMNION See Amnion dropsy of
HYDROCARBONS See also Benzopyrene Industrial hazard [McConnell] *763
HYDROCELE reaction to sodium morrhuate injections for [McCastor & McCastor] *1729
HYDROGEN ION CONCENTRATION buffering cre solutions 377
HYDROGEN PEROXIDE as depressant of gastric acidity [Culmer] 461—ab

HYDROGEN SULFIDE, mine gases and their effects 975
poisonous gases in industry 516
HYDROQUINONE stabilizing agent in vitamin A preparations Council report 1454
HYDROTHORAX in ovarian fibroma [Rhoads & Terrell] *1634
dHYDROXACETONE and liver function in pregnancy [Dietel] 1044—ab
HYGIEN Tablets 1832—B1
HIGEA See American Medical Association
HIGEA 2005—B1
HYGIENE See also Health, Industrial Mental Hygiene Sanitation
French Congress 24th meeting 369
of Pregnancy See Pregnancy
HYPERCHOLIA See Feces
HYPEREMESIS gravidarum See Pregnancy vomiting of
HYPERGLUCEMIA See Blood sugar
HYPERINSULINISM See Pancreas secretion
HYPERPARATHYROIDISM See Parathyroid
HYPERPIREXIA See Fever therapeutic
HYPERTENSION See Blood Pressure high
HYPERTHERM Ketterling See Chorea
HYPERTHYROIDISM See also Goiter
diagnosis myasthenia gravis stimulates [Bartha & Branch] *2044
hereditary pathology 288
in mother with primary thyroid hyperplasia in still born twin [Warren & Shipner] *576
in young children [Crile] 1397—ab
liver function in [Maddock & others] *2131 (bipurple acid test) [Bartels] 621—ab
liver glycogen during effect of yeast on [Drill] 1853—ab
psychosis in 2089
recurrent after thyroid surgery [Dinsmore] *183
treatment blood serum of thyroidectomized goats 71
treatment fallacy of using iodine after thyroidectomy [Davison] 312—ab
treatment inorganic iodine combinations diiodotyrosine [Krogh] 1500—ab
treatment radiation [Harris] 905—ab
unusual aspects [Dowden] *1107
HYPERTRYPHY unilateral [Chandler] *1411
HYPATICS narcotic habit from 527
HYPOATISM self 1136
HYPOGLUCEMIA See Blood sugar
Therapeutic See Dementia Praecox Trypanosomiasis
HYPOGONADISM See Gonads
HYPOLARYNX See Larynx
HYPOPHAMINE See Pituitrin
HYPOPHYSIS See Pituitary
HYPOPROTEINEMIA See Blood proteins
HYPOTHYROIDISM bullous impetigo or toxic erythema? 1383
fatigue with low metabolic rate 811
without myxedema [White] 392—ab
HYSTRECTOMY See Uterus excision

I G A Brand Table Syrup 1201
ICE CREAM Ann Page Ice Cream Dessert Powder 1127
typhoid infection from 1920
ICTERUS See Jaundice
IDE Color Test See Syphilis serodiagnosis
IDIOCY mongolian 1835
IKEDA YOICHI death 2154
ILEITIS regional Crohn's disease [Hodgson] 88—ab (prognosis) [Crohn] 169—ab 360—E [Jackson] 1079—ab [Pickhardt & Rafsky] *2048
ILEOCOLITIS dysentery in children [Blacklock] 1405—ab
ILEOSTOMY postoperative study [Whittaker] 84—ab
ILEUM fat absorption [Doubilet] 165—ab
ILIUM fracture of anterior superior spine from running [Mooney] *866
ILLINOIS Medical Society See Index to Organization Section
ILLUMINATION See Lighting
IMMUNITY See also Malaria Poliomyelitis Smallpox
connective tissue and defense reactions 1169—ab
corneal stimulation by irradiation 510—E
thyroid hormone effect on [Rocchini] 1942—ab
IMUNIZATION See also Diphtheria Poliomyelitis Rabies Tetanus Tuberculosis
ceramic acid stimulation of specific antibody production 714—E
proteinase in 300
IMUNOLOGY research in 1999
IMPETIGO bullous or toxic erythema? 1383
INPOSTORS warning against 883 1645
INPOTENCE and azoospermia 2160
cystitis with 527 (reply) [Borrell] 896
period of potency in man 891
treatment surgical 970
INCLUSION Bodies See Measles
INCOME See also Index to Organization Section
estimate of life earnings 284
Tax See Tax
INDIA See Hindu

INDIANA University (new division of laboratories) 364 (gift to library) 1820
INDIANS American new general hospital for care of 1048
INDICAN in Blood See Blood
INDIGENT See Medical Service for Indigent Physicians Indigent
INDIGO in hair dyes 813
INDOLF experimental anemia 1458—E (correction) 1739
INDUSTRIAL See also Workmen's Compensation Acts Index to Organization Section
accidents laws on Italy 1213
accidents report of Fracture Committee of B M A 57
blindness from trachoma [Gradle & De Franco] *253
city hospitals on 8 hour day New York City 282
dermatitis from Haloway and chlorinated naphthalenes 1386
dermatitis from torch oil [Kammer & Callahan] *1511
dermatitis in plasters 1064
Disease See also Industrial dermatitis In dustrial poisoning Pneumoconiosis etc
disease and hygiene Northwestern University symposium on 061
disease asthma from sulfur dioxide in refrigerator repairman [Dowling] 2020—ab
disease chronic myelogenous leukemia in machinery operators 1376
disease heat stroke salt tablets for 972
disease hernia (symptomatic) 70
disease interhemorrhagic splanchnic in coal miners dishwasher etc 443 1826
disease in chromium platers 1022
disease infective warts from bone glue [McLaughlin] 1857—ab
disease Insurance (mutual) against Italy 519
Disease Law See Workmen's Compensation Acts
disease legislation France 723 1211
disease meningitis in swineherds [Fatzner] 1083—ab
disease milkers warts [Bonnevile] 85—ab
disease nasal septum perforation in copper plating [Barksy] 406—ab
disease otitis media in airplane pilots [Armstrong & Helm] *417
disease pathologic aspect intolerance in etc 722
disease prevention [Selby] *1167
disease prevention treatment 722
disease Q fever in meat workers Brisbane [Derrick] 1586—ab
disease reportable Michigan 1994
disease splanchnic jaundice 1128—E (in Vienna) [Fleckseder] 2025—ab
disease tuberculosis in coal miners 602
disease tularemia from tick infested sheep [Winter & others] *258
disease xanthoma tuberosum in tile setter [Sugg & Stetson] *414
dusts and fumes control Massachusetts 1549
employees sickness increased in 1936 U S 964
factory work in relation to pregnancy 722
fatigue nature 879—E
bizarre effects of alcohol on workers with carbon disulfide 1472
hazard of banana oil or amyl acetate 2159
hazard of bentonite dust 1056
hazard of electric arc welding 975
hazard of green rouge or chrome green 813
hazard of materials used in lining beer cans MEK also LAC 221B 891
hazard of Shell's Kleenzeit (petroleum distillates with carbon tetrachloride) 1658
hazard of soldering process 895
hazard of sterility in pulp workers using sulfuric acid and chlorine 378
hazard of varnish for beer barrels 454
hazard of volatile solvents [McConnell] *762 956—E
Health A M A Council on See also Index to Organization Section
health A M A Council on 956—E 1990—E
health supervision of youthful workers 222
hygiene (program Germany) 517 (new division of Alabama) 860
hygiene program vaccines against common colds in industrial health program? [Brishtol] 1848—ab
infections of hands in meat handlers 975
injuries effects of heat on workmen [Talbot] 392—ab
injury and cancer 2152
injury neurologic symptoms due to 298 (reply) [Katz] 733
injury of blood vessels by pneumatic tools [Junghans] 832—ab
injury percentage of loss of vision 1474
injury relation to peptic ulcer 1220
Japan Research Institute of Industry and Labor 1921
Medical Research Institute established by auto workers Detroit 717
medicine and public health [Bristol] *245
Medicine International Congress (first) 722
medicine legal responsibility in 219
medicine teaching in France 722

INDUSTRIAL—Continued
occupation in coronary artery thrombosis [Master & others] *547
occupation life earnings according to 284
Poisoning See also Industrial dermatitis Industrial hazard
poisoning aniline 2158
poisoning brass symptoms treatment 972
poisoning carbon tetrachloride 1144
poisoning cedar predispose to lung infections? 1744
poisoning fish or erysipeloid 152
poisoning fuel oil from Diesel engine penetrates tissue [Rees] *866
poisoning gases from dynamite and TNT explosions 1217
poisoning gases from mines 975
poisoning hydrogen sulfide 516
poisoning in railway employees 888
poisoning lead diagnosis and treatment 811
poisoning tellurium 1746
poisoning trichlorethylene 810
Unemployed See Unemployed
INFANTILE PARALYSIS See Poliomyelitis
INFANTS See also Children Infants New Born Pediatrics and under names of specific diseases
ankle clonus in at 3 months 1835
convulsions in diagnosis treatment 295
erythema (unilateral) of face in 1747
Feeding See also Infants premature feeding acidified milk with high fat content in eczema [Traversaro] 542—ab
feeding (breast) alcohol and nicotine poisoning [Wyckherd Blsdom] 178—ab
feeding (breast) effects of mother's use of morphine and calomel 67
feeding Heinz Strained Beef and Liver Soup 369
feeding Larsen's Freshlike Strained Cereal 433
feeding Olac 1127
feeding Ranney's Strained Unseasoned Products 433
feeding Robin Strained Unseasoned Products 587
feeding Stoley's (liver soup) 133 (vegetable soup) 1043
growth (mental physical) vs vitamin B₁ in take [Colby] 1846 ab
head deformity after labor 1743
Mortality See also Infants premature mortality and morbidity campaign against Switzerland 806
mortality factors responsible Chicago [Bundesen & others] *337
mortality rate (record low) in Adelaide 1055
mortality reduction [Januschek] 398—ab
mortality sudden death in 18 month old 1221
premature delivery rôle in cerebral disorders [Brander] 322—ab
premature estrogen orally to [Potter] 747—ab
premature mortality [Siedentopf] 471—ab
premature new feeding for [Stoesser] 1400—ab
streptococcal infection (fulminating) in [Rector] 311—ab
welfare (program Germany) 804 (symposium) 885 (better care conference) 1097
INFANTS NEW-BORN See also Embryo Fetus
anemia of [Péau] 317—ab (iron ammonium citrate dosage in) 1146
Asphyxia See Asphyxia
buccoanal membrane (persistent) in [Leure] *347
diarrhea epidemic in hospital nurseries [Rico & others] *475
gonorrheal sepsis in [Hoffman & Schneider] *1447
Melenia See Melenia neonatorum
meninges hemorrhages [Rivière] 1160—ab
Mortality See Fetus mortality
Ophthalmia See Ophthalmia neonatorum
pyuria in [Miller] 746—ab
Resuscitation See Asphyxia neonatorum
salt water metabolism [Kerpel Fronius] 750—ab
skin care [Sanford] 826—ab
syphilis in positive Wassermann on cord blood 451 (reply) [Davies] 977, [Corbin] 1065 [Heller] 164—C 1930
tetany [Zahorsky] 226—C
INFARCT See Heart Intestines Lungs Pancreas Uterus
INFECTION See also Bacteria Meningococcus Pneumococcus Streptococcus under names of specific organs and regions
Bite See Bites
death (sudden) in 18 month old infant caused by 1221
death (uncertain cause of) 151
Focal See also Teeth infected Tonsils in infected
focal muscular fibrillation in [Slauch] 319—ab
Intrapartum See Labor
resistance to and diet [Watson] 093—ab
vitamin C and 288 [Faulkner] 53—ab (content of tissues) [Harris] 1492—ab
INFECTIOUS DISEASES See also Communicable Diseases and under names of specific names of infectious diseases

- INFECTIOUS DISEASES**—Continued
 arilation and 969
 in respiratory tract sequence [Settel] 1233
 —ab
 isolation hospital for 295
INFLAMMATION See also Bladder, Breast
 Gallbladder etc
 treatment roentgen 969
INFLUENZA complications nonspecific urethri-
 tis 810
 complications obstructive emphysema and ate-
 lectasis [Snow & Cassasa] *1886
 grip as seen in pediatric practice [Aldrich]
 1700—ab
 infection from anesthesia machine 1218
 lung changes in [Scadding] 2170—ab
 mucin virulence of *Haemophilus influenzae*
 1283—E
 prevention quinine [Splitz] 176—ab 290
 progress in research on virus and on vac-
 cination 1202—E
 virus cause neurologic symptoms? [Neal] 1490
 —ab
 virus (human) pathogenicity to animals
 [McIntosh] 1491—ab
 virus (human) studies during epidemic
 [Francis & others] *566
INFUSION See Injections Intravenous
INGUINAL Ligament See Ligaments
 rings (large) and hernia development 974
INHALATION Therapy See Heart disease
 Respiratory Tract
INHIBINS in human milk 1640—E
INJECTIONS See also under names of spe-
 cific substances
 Intradermal physiologic studies [Aron]
 830—ab
 intramuscular in buttocks 71 300
 Intravenous See also Lungs abscess
 Intravenous experimental gas embolism
 [Richardson] 310—ab
 Intravenous new method of preparing fluids
 [Co Tul & others] *250
 spinal (epidural), of any substances 1743
 Subarachnoid See Pain relief of
 Treatment See Hernia Varicose Veins treat-
 ment
INJURIES See Brain Face Head Indus-
 trial Spine Trauma
INSANITY laws Austrian proposed revision
 1465
 manic depressive diagnosis 381
INSECTICIDES hazards of contaminated fruits
 and vegetables 135—E
 preventing arsenic poisoning Louisiana 364
 toxicity of fluorides 1929
 toxicity of rotenone insect dust 1836
INSECTS See also Flies Mosquitoes etc
 retain plague infection for 10 months 1131
INSOMNIA See Sleep disorders
INSTITUTE See also Pneumonia Research
 Tumor
 of Medical Research Adelaide South Aus-
 tralia 1056
 of Medicine of Chicago survey of medical
 services of prisons Illinois 1548
 of Surgery Buenos Aires 1139
 on Cardiovascular Disease Cincinnati 1286
 on Exceptional Child 1372
INSTITUTIONS See also Hospitals Sana-
 torium
 canners in safe processes for 1046—E
 carrier survey [O Callaghan] 1081—ab
INSTRUMENTS See also Apparatus
 dermograph or pinwheel for localizing pain
 [Stern] *346 [Wartenberg] 1294—C
 for continuous reading of rectal temperature
 [Bierman] *867
 Musical See Saxophone
 repair man (fraudulent) W J Herries 366
INSUFFLATOR Shelanski vaginal 1453
INSULIN allergy [Masek] 469—ab 732
 Hyperinsulinism See Pancreas secretion
 mental disorders from atropine or novatro-
 pine given after [Quigley] *1363 [Quin-
 lan] 2006—C
 Protamine See Diabetes Mellitus
 serologic antibodies against [Bauer] *1442
 Shock Treatment See Dementia Praecox Dia-
 betes Mellitus insulin in
 treatment of nondiabetic malnutrition [Ell-
 man] 468—ab
INSURANCE See also Medicolegal Abstracts
 at end of letter V Index to Organization
 Section
 disability fraud heart disease racket 34—E
 health Austria annual report 2080
 health benefit societies Japan 2154
 health (compulsory national) Australia
 1556
 health England (capitalization) 218
 (bottle habit under) 1646 (juvenile ex-
 tension) 1918
 health for sailors Italy 1378
 health (private) Germany 2152
 health societies superlatory medical con-
 sultants Germany 444 2001
 health system proposed South Africa 60
 Hospital See Hospital
 legal responsibility in industrial medicine
 France 219
 life and cardiac arrhythmia 892
 life physicians meeting of 216
 mutual for industrial diseases Italy 519
- INSURANCE**—Continued
 social Franco (conflicts between physicians
 and inspectors) 220 (during 1934 and
 1935) 516 (professional secrecy and Hip-
 pocratite oath) 517 (specialists in) 723
 (abuse of free medical care) 885 (applied
 to railway employees) 1554 (laws and
 hospitalization) 2150
INTELLIGENCE QUOTIENT of children of pre-
 mature birth [Brander] 322—ab
INTERCOURSE Sexual See Coitus
INTERFEROMETER examinations of blood for
 hormones 1659
INTERMITTENT Claudication See Claudication
INTERN See Internships
INTERNAL MEDICINE otolaryngology in re-
 lation to [Shurly] *2027
INTERNATIONAL See also National list of
 societies at end of letter S Index to Or-
 ganization Section
 Association of Anatomists revisions of BNA
 1473
 Committee to Combat Charlatanism 1922
 Conference on Leprosy (fourth) 284
 Congress for Experimental Cytology (fifth)
 1917
 Congress for Protecting Children (second)
 291 1136
 Congress of Dermatology and Syphilology
 (tenth to be in New York) 1134 (to pub-
 lish atlas) 1733
 Congress of Industrial Medicine (first) 722
 Congress of Medicine as applied to Physical
 Education and Sports (first) 1137
 Congress of Military Surgeons and Pharma-
 cists (ninth) 1222
 Congress of Obstetrics and Gynecology 1373
 Congress of Public Health Officials 1290
 Congress of Radiology (fifth) 801
 Congress of Therapeutic Union 305
 Congress on Gastro Enterology (third) 48
 (second) 1373 1553
 Congress on Graduate Medical Study Berlin
 1554
 Congress on Hepatic Insufficiency 1552 1647
 Congress on Infantile Psychiatry (first) 1289
 Congress on Mental Hygiene 56
 Congress on Rheumatism 287 1824
 Cremation Congress 1403
 Laboratories 728—BI
 Medical Days 59 1210
 Medical Week (third) 441 1827
 Organization Against Trachoma 1051
 Peace Campaign 1918
 Pediatric Congress 39
 Physiological Congress (sixteenth) 1733
 Rheumatology Day 1212
 Short Wave Congress (first) 1139
 Society of Gastro Enterology A M A invites
 to U S 48
 Union Against Tuberculosis (prize) 217 (tenth
 conference) 283
INTERNSHIPS graduates serving *668
 hospitals approved for *683 715—E 2091
 required by medical schools and state boards
 *667 715—E
 required Italy 1378
 residences and *693 715—E
 rotating in Polk County Iowa 1642
INTERSCAPULOVERTEBRAL SPACE (right)
 continuous venous murmurs [Lian] 1587
 —ab
INTESTINES See also Colon Digestive Tract
 Gastro Intestinal Tract Rectum
 antigens new diagnostic intradermal reac-
 tion [Paulson & Kravetz] *1889
 bacteria and minerals 1638—C
 bacteria silt and diarrhea 1047—E
 Disease See Diarrhea Gastro Enteritis
 Ileitis Typhoid etc
 Diverticulitis See also Colon
 diverticulitis [Abell] *1242
 diverticulum Meckel's bleeding peptic ulcer
 in [Thompson] *938
 infarct, 1464
 infarct from occlusion of mesenteric vessels
 [De Blas] 242—ab
 inflammation acute phlegmonous [Clark]
 309—ab
 inflammation (regional enteritis) See Ileitis
 obstruction [Abell] *1242
 obstruction from dried peach [Andrews &
 Walker] *431 [Nettelroth] 1235—C
 obstruction from endometriosis of colon and
 rectum [Cattell] 745—ab
 obstruction from gallstones [Cameron] 80
 —ab
 Parasites See also Mylasias, Oxyuriasis
 Tapeworm Infestation
 parasites worms in dogs danger to man 455
 pathology of small intestine roentgen diag-
 nosis [Elvard] 1155—ab
 Perforation See Gastro Intestinal Tract
 resection anemia after 1467
 resection disorders from adrenal cortex dis-
 ease [Verzar] 1407—ab
 strangulation treatment 1918
 surgery enterectomy in hepatic cirrhosis or
 portal obstruction [Fuller] 1316—ab
 surgery uretero intestinal anastomosis (fatal)
 [von Mikulicz Radceck] 321—ab [Foley]
 391—ab
 trichomoniasis with mucomembranous entero-
 colitis [De Muro] 1320—ab
- INTOL 606—BI**
INTOXICATION See Alcoholism
INTRACRANIAL PRESSURE See also Cere-
 brospinal fluid pressure
 increased hypertensive meningeal hydropo-
 [Davidoff] 1575—ab
 increased syndrome [Dereux] 1403—ab
 reduction with hypertonic sucrose solution
 [Jackson] 1231—ab
 without brain tumor [Dandy] 1849—ab
INTRADERMAL Reaction See Intestines anti-
 gen Undulant Fever diagnosis
INVENTION See also Patents
 communication and social habitation 1774
 —ab
IODIDE Treatment See Asthma Respiratory
 Tract infection
IODINE poisoning from cutaneous application
 [Seymour] 463—ab
 containing solutions use in arteriography
 [Bird] *1626
 Test (Schiller) See Uterus cancer
 Treatment See Furunculosis Hyperthyroid-
 ism, Nails infection
IODIZED OIL death after in Skirid method
 of diagnosing spinal cord lesions 1211
 injection (transmural) in lung abscess
 [Pruvost] 1858—ab
 test of pancreatic function 369
IODIZED SALT See Goltz prevention
IODOBISMUTOL See Syphilis treatment
IODOFORY Treatment See Amebiasis
IONTOPHORESIS See Rhinitis vasomotor
 Thrombophlebitis treatment
IPRAL Sodium Elair 1543
IRON See also Steel
 Ammonium Citrate See Anemia
 causative agent of Kaschin Beck's disease
 [Hlyeda] 829—ab
 deficiency anemia of late infancy [Fullerton]
 171—ab
 extrinsic factors in circulatory disorders
 [Weiss & Wilkins] *787
 in spinach vs tomatoes [Tisdall] 1760—ab
 (spinach only Council report) 1907
 metabolism in early infancy 279—E
 metabolism in hemochromatosis [Fowler]
 1853—ab
 reduced antiscorbutic properties of salt of
 [Plojan] 909—ab
 retention factors influencing 1281—E
 retention role of gastric acidity [Daret]
 165—ab
 Treatment See Anemia
 vaporized solutions lung reactions to 1826
IRRIGATION Needle See Bursitis
ITALIAN Pharmacopoeia See Pharmacopoeia
ITALINA Effervescent Salts 2156—BI
IVEY S Vigor Aid 1060—BI
- J
- JACKSON CHEVALIER** in Paris (course in
 broncho esophagoscopy) 1137 (hospital
 ward named for) 1648
JACKSON JAMES (1777 1867) letter to
 Paget [Hendel] 1295—C
JACOBÆUS HANS CHRISTIAN death 1733
JACOBI Fellowship See Fellowship
 Memorial Fund 39
JAFFE S Color Reaction See Blood creatinine
JAILS See Prisons and Medicolegal Abstracts
 at end of letter M
JAKE Paralysis See Neuritis peripheral
JAMAICA GINGER Paralysis See Neuritis
 peripheral
JANSEN B C P coined Aneurin for vita-
 min B 952
JAPAN Research Institute of Industry and
 Labor 1921
JAPANESE Chinese War See Chinese Japanese
 War
 German Medical Society founded in Tokyo 518
Hematology See Journals
JAQUES Little Wonder Capsules 1741—BI
JAQUET ALFRED death 806
JAUNDICE arsenamine [Graffar] 90—ab
 [Soffer] 164—ab (in neurosyphilis) 152
 blood serum phosphatase in [Cantarow] 461
 —ab
 cinchophen has fever and asthma during
 and after [Boros] *113
 diagnostic significance [Heyd] 83—ab
 effect on chronic infectious arthritis and on
 primary fibrositis [Hench] 1481—ab
 [Thompson] 1482—ab
 epidemic benign in children [Popovic Lupu]
 397—ab
 epidemic catarrhal 975
 hemolytic congenital skeletal roentgen changes
 in [Acuna] 1860—ab
 hepatocellular [Sprunt] *1947
 pseudo icterus not due to henna poisoning,
 possibly to trinitrophenol 1146
 spirochetal 1128—E
 spirochetal agglutination test in Wells dis-
 ease [Smith] 2106—ab
 spirochetal epidemic of *Leptospira canicola*
 [Roos] 632—ab
 spirochetal in coal miners diswashers etc
 443 1826
 spirochetal laboratory rats as source of
 Wells disease [Korthof] 1678—ab

JAUNDICE—Continued

- aplochelet meningism in Wells disease [Makachof] 1590—ab
aplochelet Wells disease [Gaines] 2168—ab
aplochelet Wells disease in animals [Wirth] 997—ab
aplochelet Wells disease in Brisbane [John son] 747—ab (in Vienna) [Fleckseder] 205—ab (in India) [Das Gupta] 2105—ab
treatment surgical cause for high mortality [Best] 1855—ab
Volhard's test of water elimination in [Main mud] 995—ab
- JAWS See also Cums Teeth
cysts (anatomous) of maxilla [Rosedale] 156—ab
fractures automobile injuries [Strait] *940
subluxation of temporomandibular joint so dium psyllato infection for [Schultz] *1032
- JAW WINKING PHENOMENON [Ascher] 1580—ab
- JEWS Hitler's persecution (excluded from graduation) 445 (English society for persecuted scientists) 802
- JOHNSON HUGH S radio commentator for Crove Laboratories Inc 716—E
- JOINTS See also Elbow Hip Joint Knee etc
Charcot's See Tabes Dorsalis
disease short wave therapy [Maraglano] 833—ab
pains in serum sickness 896
Temporomandibular See Jaws
- JONES F WOOD 516
- JOSLIN S definition of diabetes mellitus 802
- JOURNALS See also Newspapers Index to Organization Section
American Journal of Obstetrics and Gynecology dedicated to Dr R T Frank 215
Annals of Medical History editor 1733
Archives Internationales des brucelloses 1648
Bulletin of the Inter Society Committee for Radiology 1208
Colorado Medicale to be known as Rocky Mountain Medical Journal 1287
Diseases of the Chest 514
files of value of professional library depends on 125—ab
Journal of Connecticut State Medical Society to become monthly 716
Journal of Health and Physical Education 369—E
Journal of Neurophysiology 1997
Journal of Pathologic Haematology changed to Japanese Haematology 289
Lancet editor death of Sir Squire Sprigge 212—E 36 (Norland appointed) 516
Life fraudulent subscription agents 514
Medicine Today and Tomorrow 1647
Moscow Institute of Physiology monthly bulletin 60
Research Quarterly 362—E
Time publisher of H R Luco awarded Clement Cleveland Medal 1644
JUDSON Daland Foundation See Foundations
- JUGULAR Vein See Veins
- JURISPRUDENCE MEDICAL See Medical Jurisprudence
- JUSTICE OF PEACE See Medicolegal Ab stracts at end of letter M
- J W D Blood Purifier 1060—B1
- K
- K12 toxicity 1567
- KAISER Wilhelm Gesellschaft for Advancement of Science 1648
- KALA AZAR See Leishmaniasis
- KALIN Treatment See Colitis ulcerative
Rectum hemorrhage Trichomonas vaginalis
- KASCHIN BECK'S Disease See Osteo Arthritis deformans
- KASTOR Gems 1741—B1
- KAYATONE Soft Mass Pills 2005—B1
- KAYS Ointment Powder Leg Oil 1653—B1
- KELLOGGS (Dr J D) Asthma Remedy 1832—B1
- KFLÖGG VERNON LYMAN dies 595
- KENTUCKY Psychiatric Association organized 1730
- KEPHRINE chemical formula *2065
- KERATITIS dendritic quinine bisulfate for [Sellers] 308—ab
interstitial in late prenatal syphilis [Cole] *580
auroparalytic treatment [MacMillan] 1851—ab
superficial punctate with herpes facialis [Vame] 624—ab
- KERATOMALACIA treatment red palm oil [Ayrojd] 1236—ab
surgical treatment of leukokeratosis of penis [Hansen] 322—ab
- KERATOSIS of external auditory canal 2000
- KERENE 1060—B1
- KETOGENIC Diet See Diet Epilepsy
- KETONE industrial hazard [McConnell] *765
ketone and nonketone estrogens [Westerfeld] 1312—ab
- KETOXEMIA See Blood Vomiting ketonemic
- KETOSIS See also Acidosis
developed during fasting [MacKay] 1669—ab

- KFTTERING Hypertherm See Chorea
- KIDNEYSTONE nostrums 2156—B1
- KIDNEYS calculi into results in conservative management [Priestley & Bransch] *1703
calculi and nephritis 2088
calculi mold (cephaloporus) as epiphyte on [Oomen] 1086—ab
calculi relation to calcium plaque formation in papilla [Randall & others] *1693
calculi relation to diet case of South African Negro [Bunt] [Vermooten] *857
calculi surgery for [Quinby] 1939—ab
calculi theory of origin [Randall] 463—ab
calculi vitamin A deficiency sign in eye [Ezlekson & Feldman] *1706
denervation of pedicle in essential hypertension [Lovenstein] 472—ab
disease acacin infection for [Landis] *2030
disease (chronic) operative intervention 2030
disease clinical value of Indicanemia [Pittelli] 831—ab
disease in young child treatment [Schlutz & Collier] *1059
dysfunction vitamin A in urine a prognostic sign [Boiler] 1162—ab
excretion of bacteria injected in blood [Ligas] 2107—ab
excretion of sulfanilamide [Marshall] 2019—ab
fixation new x-ray sign in perinephric abscess [Minthe] 1848—ab
function of calices musculature [Hennig] 831—ab
function test Volhard's water elimination test in jaundice [Malamud] 995—ab
function urea clearance test in psychosis [Wyllie] 829—ab
functional disorder increase in rest nitrogen during diabetic coma [Göpfert] 1943—ab
functionless effect of surgical drainage [Schulhof] 1079—ab
Glomeruli See Nephritis
Hemorrhage See Nephritis hemorrhagic
hepatorenal syndrome [Pytel] 631—ab
hyperparathyroidism with Cushing's syndrome [Fons] 1071—ab
Inflammation See Nephritis
insufficiency Jaffé's color reaction for creatinemia [Popper] 915—ab
ischemia hypertension induced by 1640—E 2002
lesions due to diethylene glycol (elixir of sulfanilamide) [Kesten & others] *1509
[Gelling & others] *1532
morphine effect on 1137
movable diagnosis treatment [Herbst] 1848—ab
movable nephropepy [Berr] 749—ab
Pelvis See Pyelitis Pyelography Pyelo nephritis
peritoneal air insufflation to demonstrate adrenals [Mencher] *1338
ptosis [Matheson] 2110—ab
surgery decapsulation in nephritis and nephralgia [Cimnata] 318—ab
surgery exercise after nephrectomy 2090
surgery nephrostomy and decapsulation in anuria from cresol [Livermore] *1523
trauma descending pyelography in contusions [Di Minto] 176—ab
trauma x-ray diagnosis [Ritvo & Stearns] *1101
tuberculosis treatment [Jacobs] 86—ab
tumors (malignant) in infants and children [Cmmbell] *1606
- KINGCO Chocolate Flavor 587
- KINNEY S Yeast Extract 276
- KIRBY S Miracle Mineral 2085—B1
- KITCHENS W D fraudulent sales agent 366
- KLEENZIT Shells Industrial hazard 1658
- KLORIA 2005—B1
- KNEE See also Patella
Chest Exercise See Uterus retrodisplacement
ligaments lesions treatment [Mandl] 243—ab
painful only on ascending or descending stairs [Moschowitz] *1362
roentgen study (postero anterior) in flexion [Holmbind] *1196
tumor osteogenic sarcoma after mild injury 453
tumor xanthoma tuberosum after trauma in the setter [Sugg & Stetson] *414
- KNIFERS Tonic 2005—B1
- KNOPPE Spider See Spider
- KOLMER complement fixation test sensitivity 134—F (correction) [Kolmer] 522—C
vaccine See Poliomyelitis
- KOVET 440—B1
- KOPO Bilc Salts Tablets 2005—B1
- KOPP S Alcohol 2085—B1
- KORIN ALEXANDER honored 1202
- KORSAKOFF'S SYNDROME treatment methamphetamine [Brunerie] 748—ab
- KRAUSE FEDOR death 1920
- VON KREHL LUDOLF death 370
- KRISBY Krumbs 2005—B1
- KURLENE Elyash Grover 1832—B1
- KYNOGRAPHY See Esophagus roentgen study Stomach roentgen study

L

- LABOR See also Abortion Midwives Obstetrics Puerperium
Anesthesia in See Anesthesia
attendants at Negro births 1733
complications acetylcholine treatment of uterine inertia [Bell] 625—ab
complications contraction ring dystocia use of epinephrine [McKenzie] 164—ab
complications posterior pituitary extracts cause uterus rupture [Jungbans] 92—ab
complications problem in woman with heart disease and hypertension 1746
complications uteroplacental apoplexy 1999
death (sudden) in relation to barbituric analgesia [Montgomery] 163—ab
epistomy method of performing 153
induced placental infection in [Penfold] 1236—ab
induction oxytocic drugs [Davis] *1633
infection during [Anderson] 87—ab
moving patient within 24 hours after 1745
presentation breech [Tams & Clair] *196
local vs general anesthesia in [Urnas & Timmerman] *1610
presentation fetal postural mechanism [Rudolph] 170—ab
roentgen pelvimetry 1745
roentgenography by lateral pelvic exposure [Reichenmiller] 1085—ab
Third Stage See Placenta expulsion
- LABORATORY A M See American Medical Association Chemical Laboratory
Animals See Animals
clinical technicians approved schools for by A M A *709 *710
division at Indiana U 364
International Laboratories 728—B1
services expanded Iowa 061
state health department (new) Mich 1914
state serodiagnostic syphilis tests performed by [Parran & others] 134—E *425 437—E
- LAC V21B used in lining beer cans toxicity 891
- LACLYDE Lemon Vegetable Soap Lucky Bleaching Ointment 1832—B1
- LACTATION See also Infants feeding Milk human
as contraindication to digitals therapy for mother 731
billy goat which gives milk 1658
- LACTOBACILLUS Acidophilus See Dysentery bacillary Milk acidophilus
- LACTOFLAVIN See Riboflavin
- LACTOSE Treatment See Trichomonas vaginalis
- LAKE MICHIGAN deadline for Indiana cities to stop pollution 1206
- LAMB Bay Shore Brand Stered 1201
- LAMBERTS (J O) Syrup 1560—B1
- LAMBLIASIS addisonism [Dreyfus] 1085—ab
clinical glandularis [Goss] 622—ab
- LAMBRET Professor honored 1376
- LANCET See Journals
- LANDUN Corporation carbon arc lamps 1217
- LAPAROTOMY See Abdomen surgery
- de LAPESSONNE FEIIX death 285 803
- LARD hydrogenated Chl Shortening 1043
Puritan Brand 1043
- LAROCAINE Hydrochloride Tablets N A R 1365
- LARODON Roche 209
- LARSEN S Freshlike Strained Cereal 433
- LARVA See Maggots
Infestation See Myiasis
- LARYNGOICIST relation to vocal teacher [Ridpath] *545
- LARYNGOLOGY American Laryngological Association Casselberry Prize 710
- LARYNGOTRACHEOBRONCHITIS acute infective epinephrine intratracheally [Green & Miller] *1903
- LARYNX acute inflammation of hypopharynx 2000
cancer tomography [Canvut] 2107—ab
pathology of prelingual gland [Collet] 1802—ab
radiography opaque mediums in 2000
- LATERAL SINUS Thrombosis See Thrombosis
- LATEX used as substitute for collodion [Narat] *655
- LAURFENCE MOON BIEDL syndrome [Nuteh] 214—E
University quadracentennial 805
- LAURELL CHARLES H death 2076
- LAVS See Harrison Narcotic Act Insurance Legislation
- LAWYERS See Attorneys
- LAXATED H L C 1925—B1
- LAXATIVES See Cathartics
- LEAD encephalitis in children [Blackman] 824—ab
in colored chalks danger to children [Jephcott] 1488—ab
poisoning diagnosis treatment 811
poisoning from cooking utensils [Sela] 2105—ab
poisoning hazards of contaminated fruits and vegetables 135—F
poisoning or progressive muscular atrophy 2089

- LEAD**—Continued
poisoning quantitative estimation of lead in urine 71
poisoning sources in Chinese [Yang] 911—ab
- LEAGUE OF NATIONS** Mixed Committee on Problem of Nutrition report 965
world health and 2142—E
- LEES (L G C)** Herbal Compound, 2156—B1
- LEECHES** Therapeutic Use See Neuralgia trigeminal
- LEG** See Legs
- LEGISLATION** See also Social Security Act
Workmen's Compensation Acts Index to Organization Section
compulsory retirement law, (Pomoret bill) professors exempt from France 58
laws on industrial accidents Italy 1213
medical bills in U S Congress 217, 363 367 511 514 596 716, 720 1823 1917 2077
on industrial diseases France 723 1211
physical training and recreation bill passed England 218
S 2067 bill establishing National Cancer Institute 434—E
safeguards proposed to govern distribution of dangerous drugs 1911—E *1988
U S food and drugs 1546—E
- LEGS** See also Amputation Ankle Femur Foot Knee Toes
fasciol hernia sodium morrhuate injection [Schmier] *28
intermittent attacks of pains in in children 1928
local overgrowth [Chondler] *1411
lymphedema 729
muscle (supernumerary) 371
pains cervicitis and prostatitis as cause of 2087
sensation in changes after head injury 609
ulcer (chronic), 1220
- LEISHMANIA**, cultivation in goats milk [Laurinsch] 1860—ab
- LEISHMANIASIS** treatment unimomy stable solution (Napier) 1584—ab
- LEMON** juice (Hulburt's Brand) 587 (Valora Brand) 1815
- LENNINGRAD** Institute of Roentgenology Radiology and Cancer 60
- LENS** CRYSTALLINE vacuoles in a form of cataract 1744
- LENSES** See Glasses
- LEON** Bernard Foundation See Foundations
- LEOPOLDINE** Academy 250th anniversary 518
- LEPEL** SVP Portable Short Wave Diathermy Machine, 1364
- LEPROSY** campaign French Colonies 1375
colony for Brazil 147
environmental factors in 1873
International Conference on (fourth) 284
McCoy (George W) studies 285
nodes methylene blue staining 291 1920
reticulo endothelial system in 2153
treatment tellurium [Morchoix] 912—ob
- LEPTOMENINGITIS** See Meningitis
- LEPTOSPIRA** Canicola See Jaundice spirochetel
- LEPTOSPIROSIS** See Spirochetosis
- LESLIE** Brand Hawaiian Pineapple Juice 587
- LEUKEMIA** onemio in [Beltrametti] 176—ab
blood of patient use in treating agranulocytosis [Boch] 2108—ab
blood picture in fibrosis of marrow [Metzler] 307—ab
complications bronchopneumonia inflammatory reactions of lung [Dreyfuss] 2107—ab
diagnosis bone marrow changes in [Weller] 1315—ab
genetics in man [Ardashnikov] 173—ab
lymphatic herpes zoster in [Scheinker] 916—ab
lymphatic treatment 1217
lymphatic with pertussis [Lery] 537—ab
lymphocytic with advanced tuberculosis [Ryan] 1073—ab
lymphosarcoma cell [Isaacs] 1937—ab
meningism in [Minkenhof] 1590—ab
monocytic [Montgomery] 743—ab
monocytic chronic [Smith] 910—ab
monocytic skin symptoms [Sanleandro] 629—ab
myeloblastic acute, after malaria therapy [Adelheim] 471—ab
myelogenous chronic arsenic poisoning in [Kandel] 2168—ab
myelogenous chronic in machinery oilers 1376
myelogenous chronic potassium arsenite plus roentgen therapy [Stephens] 741—ab
myelogenous saliva cell count in, [Allen] 905—ab
myelosis (early) and remission in [Pennell] 915—ab
skin manifestations in, [Gaté] 395—ab
transmissible in mice with atypical cells [Barnes] 307—ab
treatment radium [Parsons] 1404—ab
tumor like growth in [Elschacker] 321—ab
- LEUKOCIDIN**, typhoid 280—E
- LEUKOCYTES** count extreme leukocytosis in whooping cough [Pearson] 1159—ab
count (filament nonfilament) in arthritis [Stein Brocker & Hartung] 606—C
count leukopenic index during gastric analysis [Long] *23
- LEUKOCYTES**—Continued
count leukopenic index in food allergy, [Denny] 622—ab 2006
count (Shilling) vs sedimentation rate in rheumatic infection 878—E
count, serum proteins in leukopenia [Bing] 1086—ab
Edwells effect on [Stainsby & Shultz] *273 280—E
modified by mercury orsphenamine and bis muth in syphilis [do Lillo] 90—ab
neutrophilic granulocytes effect of typhoid leukocidin 280—E
picture changes in swimming [Kellner] 1677—ab
- LEUKOKERATOSIS** See Keratosis
- LEUKOPENIA** See Leukocytes count
- LEUKOPENIC** See Angina agranulocytic
- LEUKOPENIC INDEX** See Leukocytes count
- LEUKORRHEA** 2007
in young girls 1728—E
- LEUKOTOMY** See Brain surgery
- LEWIS J HAMILTON** 32—E 436—E
- LIBBY'S** Hawaiian Pineapple 1043 1815
- LIBRARY** See also Journals
booked for a fall 785—nb
habit 1702—ab
of Jackson County Medical Society 25th anniversary 1643
of Medical Society of County of Kings and Brooklyn Academy annual report 54
of University of California given Dr Brigham's library 137
of University of Illinois receives gifts from Dr Pusey and Dr Hertzler 1641
package library service Indiana 1642
Rudolph Matas Medical Library at Tulane 2074
value depends on files 125—ab
- LICL** Infestation with See Pediculosis
- LICENSURE** See also State Boards
Annual Congress on 1913
bill to prohibit illegal practice, France 57
federal proposed 32—E 436—E
Jews outlawed excluded from doctors de gre, Germany 445
license of Dr R W Debush lost 440
medical board ordered by court in registering foreigner Australia 1056
of Automobile Drivers See Automobiles of graduates of foreign faculties 1930 1936 *675
- LIDS** See Eyelids
- LIFE** See Journals
- LIFE** Duration See Longevity Old Age
earnings estimate of 284
Insurance See Insurance
what havoc we make of our chances 856—ab
- LIFESTAFF** Natural Crain 1637
- LIGAMENTS** hypertrophy of ligamento flava [Spurling & others] *928
inguinal length of in differentiating inguinal hernia [Harris & White] *1900
of knee joint lesions treatment [Mandl] 243—ab
ulerosacral endometriol cyst of (rare) [Israel] *574
- LIGHT** sensitivity of eye to colored direct light testing 442
measuring daylight in rooms apparatus for 442
Protection Against See Ultraviolet Rays
sensitivity and sulfanilamide [Frank] *1011
[Newman & Sharlit] *1036 [Grosjean] 1382—C
sensitivity in dermatoses [Stokes] 2018—ab
sensitivity rôle in dermatitis caused by gas plant [Cummer & Dexter] *495
sensitizing substances and skin tumors [Büngeler] 1321—ab
- LIGHTING** for dormitories 609
for operating room 1064
for schoolroom [Jackson] *841
- LINDBERGH** apparatus culture method for virus 1210
- LINNAEUS** Carl von Linné 1473
- LIP** See Lips
- LIPEVIA** See Blood fats
- LIPIDOSE** research in neuropathology, [Van Bogaert] 175—ab
- LIPOID** pneumonia and oil in lungs 1367—E
- LIPOIDOSIS** phosphatide, [Lignac] 998—ab
- LIPOMA**, cause of neck enlargement 1386
episcrolic [Riles] 1756—ab
- LIPS** cancer and cutaneous irritation in U S Navy [Peller] 1436—ab
cancer (triple primary) [Drooker] *1180
frenum of upper 974 977
- LIPSTICKS** See Cosmetics
- LIVOR** See Alcohol Wine
- LITERATURE** See Journals, Library, News papers
- LITTALER** (Lucius N) Institute for Speech Disorders 513
- LIVER** abscess (multiple) from perforating duodenal ulcer [Roberts & Hadley] *1629
amebic abscess [Young] 991—ab
as commissariat of body [Mann] 1311—ab
Bay Shore Brand Sliced Liver 1201
cancer, intrahepatic hemorrhage in [Loeper] 812—ab
cirrhosis ascites in relation to menstrual function [Hartwell & Johnson] *1800
- LIVER**—Continued
cirrhosis diagnosis and treatment in early stages [Sprunt] *1945
cirrhosis (hypertrophic) splenectomy for 1033
cirrhosis (latent) after traumatic diaphragm rupture [Goodman] *1980
cirrhosis sequel of splenectomy in [Dergeret] 830—ab
cirrhosis tuberculous splenomegaly and Bant's disease [Fillipini] 1084—ab
cirrhosis with ascites enterectomy in, [Fuller] 1316—ab
crowing for in pernicious anemia 1566
deaths, [DeCourcy] 618—ab
diseases lipids in blood [Campana] 1084—ab
disorders viscosity of blood serum vs albumin globulin quotient and Takata test [Kunditz] 1767—ab
dysfunction prognosis vitamin A in urine [Bolter] 1162—ab
echinococcus 443
Enlargement See also Liver cirrhosis Pick's Syndrome
enlargement eosinophilia with [Thomson] 910—ab
Extract Armour 2141
extract (parcnerol) in pneumonia [Wilson] 389—ab
external treatment of chronic agranulocytosis [Das Gupta] 747—ab
extract Vials Chappel Liver Extract (Subcutaneous) 10 cc 1365
function and oxytocin during pregnancy [Dietel] 1944—ab
function and vitamin D 2073—E
function in anesthesia [Gagliardi] 189—ab
function in hyperthyroidism [Vaddock & others] *2131
function test bilirubin 1746
function test (hippuric acid) in hyperthyroidism [Bartels] 621—ab
function test in tuberculosis [Balanesco] 320—ab
glycogen in hyperthyroidism effect of yeast on [Drill] 1853—ab
hematopoiesis (normal) [Bertelsen] 244—ab
hepatorenal syndrome [Pyle] 631—ab
in chronic acetophenetidin intoxication [Esperien] 2026—ab
inflammation after dimethylphenol 731
inflammation (benign) of early syphilis [Waugh] 1487—ob
insufficiency in collis [Binet] 241—ab
insufficiency International Congress on 15:2 1647
involvement in esophthalmic goiter [Reiz] 1411 1409—ab
iron storage in questioned 279—F
nicotinic acid amide from cures pellagra 1203—E [Smith] *2054 2086—C [Funk] 2086—C
Oil See also Cod Liver Oil
oil Burnet 28
rehabilitation in primary suppurative cholangitis [Bassier] *864
soup Stokely's Stomach 133
traumatic rupture mortality prognosis 976
Treatment See Anemia Liver extract
vitamin A reserves in 590—E
vitamin B₁ and fatty livers [McHenry] 173—ab
vitamin B₂ new essential dietary factor in [Halliday] 907—ab
- LOBELINE** sulfate pharmacology [Wright & Littauer] *649
- LOBSTEIN'S** Disease See Osteosarthritis
- LOCOMOTOR** Ataxia See Tabes Dorsalis
- LODGE** Contract Practice See Index to Organization Section
- LONDON** County Council plan for juvenile rheumatism [Core Smith] 316—ab
- LONGEVITY** See also Life duration Old age in coronary disease in early life and all ages [Glendy & others] *1777
- LOPES, MARIA DA CONCEICAO** honor memory 1466
- LORENZ ALBERT** opinion on American orthopedics 361—E
- LOUISIANA** Society for Mental Hygiene organized 213
State Medical center, 881
- LOUPING** ILL in human subjects [Wiebel] 82—ab
- LYBROL** 2005—B1
- LUCE HENRY R** publisher of Time receives cancer medal 1644
- LUCOROL** 1741 B1
- LUMBAR** Lesion See Spine
Puncture See Spinal Puncture
- LUNGS** See also Pleura Respiratory Tract
abscess gualacol intravenously for [Namack & Tiber] *330
abscess myelogram and peripheral blood modified in [Berfola] 1:38—ab
abscess transmural iodized oil injection of in [Pruvost] 1853—ab
Apley's See Tuberculosis Pulmonary
Asbestos body in See Pneumoconiosis
cancer and tarred road dust [Campbell] 621—ab
cancer noncancerous consolidations in 412
cancer paraffin embedding of sputum in diagnosis [Jostio] 542—ab

LUNGS—Continued
cancer primary bronchogenic, (Mattick & Burke) *2121
capacity of to regulate water content of blood [Fröhlich] 93—ab
Cavities See Tuberculosis Pulmonary cavities
changes after irradiating extrathoracic tumors [Hirsch] 822—ab
changes in influenza [Scadding] 2170—ab
changes in malaria fever [Lafferty] 407—ab
collapse (atelectasis) in influenza [Snow & Cassasa] *1886
collapse (rare form) in pneumothorax [Abdikadir Lutfi] 631—ab
conditions chronic nontuberculous [O'Brien] 210—ab
cysts (air) diagnosis [Huber] 89—ab
diagnosis (pediatric) 3,8
Diseases See also Influenza Pneumoconiosis
Pneumonia
disease cedar poisoning predispose 1744
experimental overinflation pneumothorax from 959—E [Macklin] 1470—C
Hemoptysis See Tuberculosis Pulmonary
hemorrhage acacia infection in [Berghausen] 1074—ab
hemorrhage rarer causes 146
infarct postoperative 1464
inflammatory reaction in bronchopneumonia complicating leukemia (Dreyfuss) 2107—ab
lesions obscure radiologic interpretation [McDougal] 911—ab
oil in and lipid pneumonia 1367—E
palas in splanchicotomies [Leriche] 748—ab
parenchyma modifications after sympathectomy [Blasini] 469—ab
pathology in silicosis [Matz] 1233—ab
reactions to vaporized solutions 1826
rest of effect of lateral position in normal adults [Vacarezza] 1765—ab
roentgen aspects of interlobar fissures [Roulier] 1319—ab
roentgen shadows (marginal) in lamellar pleurisy in infants [Migliori] 90—ab
surgery bilateral trilobectomy [Overholt] *127
Tuberculosis See Tuberculosis Pulmonary
Vital Capacity See Vital Capacity
water exchange in in decompensated heart disease [Calabrese] 1494—ab
LUPINUS albus seeds action on glycemia [Ferranelli] 1238—ab
LUPUS See also Skin tuberculosis
erythematous form of ibrombocytopenic purpura [Kell] 540—ab
fight against Germany 1649
pemic of Besnier Tenneson type 291
rugs electrocoagulation plus other local therapy [Genner] 2110—ab
rugs phenyl ethyl hydnoacarpate for [Wallace] 625—ab
LUR EYE Lash Developer 2005—BI
LYCOPodium granuloma from anal suppositories [Antopol & Robbins] *1192
LYCEL 1741—BI
LYMPH absorption in peritonitis effect of anesthetics on [Mencle] 166—ab
LYMPHATIC LEUKEMIA See Leukemia
LYMPHATIC SYSTEM adenitis in childhood [Brook] 1318—ab
giant cells in tissues preceding measles 1047—E
mesenteric lymphadenitis [Herxle] 1766—ab
node as source of neutralizing principle for vaccinia [McMaster] 744—ab
node involvement operative treatment in cancer of cervix 599
retaryngeal gland pathology [Collet] 1082—ab
tuberculous cervical lymphadenitis [Reid] 2022—ab
tuberculous tracheobronchial adenopathy [Roubier] 1160—ab
LYMPHEDEMA See Elephantiasis
LYMPHOCYTES See Leukemia lymphocytic
Menagitis lymphocytic
LYMPHOGRANULOMA malignant roentgen treatment [Friman Dahl] 1944—ab
LYMPHOGRANULOMA VENEREUM [Chapman] 826—ab 876—E
anoorectal stricture in [Redell] 2026—ab
blood serum proteins in [Jersild] 1862—ab
epidemiology Dr Sven Hellerstrom requests data 1208
treatment roentgen [Guarini] 749—ab
virus diagnostic intradermal reaction [Paulson & Kravetz] *1380
LYMPHOSARCOMA cell leukemia [Isaacs] 1937—ab

M
MACARONI Foulds 1637
MACLELLAN'S Orthosol 1653—BI
MACRUS Cobra Venom Treatment See Paralysis aglans
McLEAN'S (Dr J H) Universal Liver Pills 1925—BI
MacNARR Brand Evaporated Milk 1455
McNESS Sarsaparilla and Burdock Compound 1741—BI
MAGGOTS infestation See Myiasis
therapy bone regeneration after [Simon] 1758—ab

MAGGOTS—Continued
therapy in infected wound in hemophilia [Poille & Maddock] *2055
MAGNESIUM alloy bone alloy report on 967
oxide to remove fluoride from water [Eltrove] 1581—ab
Sulfate Treatment See Eclampsia
trisulfate neutralization of hydrochloric acid by [Mann] 172—ab
MAJESTIC Porcelain Surgical Unit 1042
Ultra Short Wave Unit 536
MALARIA all union antimalaria conference U S S R 59
chronic cinchophrine for 290
control British possessions 516
immunity (passive) in 1547—E
plasmodia penetration into reticulocytes [Eaton] 629—ab
project of Rockefeller Foundation approved Florida 960
quarain proniosil in [Van der Wielen] 398—ab
study course Florida 880
therapeutic acute myeloblastic leukemia after [Adelheim] 471—ab
therapeutic in progressive muscular dystrophy [Rottmann] 752—ab
treatment atabrine psychoses after 812
treatment atabrine musonate in children [De] 625—ab
treatment atabrine plasmochin fatality after [Decher] 174—ab
treatment sulfanilamide [Diaz de Leon] 1940—ab
tropical clinical course [Tarnogradsky] 544—ab
MALE Sex Hormones See Androgens
MALIGNANCIES See Cancer Sarcoma
Tumors malignant
MALINGERING See also Dermatitis factitious
possible or fever of unknown origin 453
MALNUTRITION See Nutrition
MALPRACTICE See Medical Abstracts at end of letter M
MALTA FEVER See Undulant Fever
MALVITOSE 1741—BI
MAN glass man exhibit from German Museum of Hygiene 445
MANDELATE Ammonium See Pyuria
MANDELIC Acid See Acid
MANICURE See Nails
MAINTOXY TEST use in children under 8 1144
tuberculin ointment patch test substitute for [Wolf & Hurwitz] *2042
MARPHASEN Treatment See Syphilis early
MARBLE BONES See Osteosclerosis fragilis
MARIJUANA See Cannabis in Index to Organization Section
MARINESCU Professor celebration 1292
MARLE FOUNDATION See Foundations
MARLEO Ointment 1653—BI
MARRIAGE See also Collus Divorce
decrease France 145
epilepsy (possible diagnosis) and 1219
license law (new) Illinois 52 (use Kahn instead of Wassermann) 511
number of births to [Cudwallader] 150—C
objection to wife being older than husband 1031
physical examination of applicants Michigan 1049
syphilis (prenatal) patients marry? [Cole] *584
tuberculous patients marry? 1557
MARRIOTT Memorial Pediatric Fund 1132
MARTIN A C divine healer fined 799
MARTIN LOUIS honored 145
MARTYRS See also Heroes
Davis (J C B) slayer of sentenced to hang 439
Lopes (Maria da Conceicao) 1466
Noguchi and Young 217
MASKS and isolation in colds 1386
gas distribution England 1052 (for babies) 1918
MASON'S Scottish Rite A M A resolution on psychiatric research by 41
MASSAGE See also Masseurs
cream sebaceous gland cysts from 453
MASSEURS regulation Belgium 1466
MASSTIN'S Vitamin Tablets 449—BI
MASTITIS See Breast inflammation
MASTOID fracture of skull involving [Coleman] *1613
infections direct vs intermediate pathways [Hadjopoulos] 536—ab
suppurations of pyramidal cells 804
MASTOIDECTOMY ageusia after [Ho] 1232—ab
MASTOIDITIS pneumococcus vaccination against intracranial complications after [Cameron & Hoskins] *1254
treatment of blood stream infections from [Fenton] 536—ab
MASTURBATION in women 1564
MATERNAL mortality and morbidity in breech delivery [Urnes & Timmerman] *1617
mortality 2078
mortality home vs hospital Germany 1212
mortality vs antepartum care [Tams & Chahr] *195
premiums France 885

MATERNAL—Continued
welfare (grants under Social Security act) 870—E (program N J) 881 (better care conference) 1997
MAXILLA See Jaws
MAXIMUM Brand Evaporated Milk 1455
MAYO Foundation See Foundations
MEASLES diagnosis oitic phenomenon [Be spaloff] 748—ab
etiology microscopic inquiry [Coles] 992—ab
German See Rubella
inclusion bodies in [Broadhurst] 1759—ab
prevention and treatment (adult serum convalescent serum or placental extract) 1817—E [McKhann] *2034
prodromal stage giant cells in lymphatic tissues 1047—E
visceral pathology [Degen] 742—ab
MEAT See also Beef Liver
cold intestinal myiasis from Sarcophaga larva on [Bryan] *573
contaminated with poison gases consumption 1291
extracts as gastric stimulants [Boon] 1583—ab
handlers hand infections in 975
handlers Q fever in Brisbane [Derrick] 1586—ab
METHOLYL See Acetyl Beta Methylcholine
MECKEL'S Diverticulum See Intestines
MEDALS See Prizes
MEDIASTINOPERICARDITIS See Pick's Syndrome
MEDIASTINUM roentgen study by perirenal insufflation of air [Mencher] *1340
tumors differential diagnosis 1463
MEDICAL ASSOCIATION See also Societies
Medical and list of societies at end of letter S
of Georgia public relations bureau 961
MEDICAL BUREAU of Pittsburgh (correction) 140
MEDICAL CENTER See also Health center
for rural physicians Bingham's gift Mass 717
MEDICAL COLLEGE See Schools Medical
MEDICAL DAY Kansas City Mo 1133
MEDICAL DIATHERMY See Diathermy
MEDICAL ECONOMICS See Economics Medical
MEDICAL EDUCATION See Education Medical
MEDICAL EMERGENCY RELIEF See Emergency Relief
MEDICAL EXAMINATION See Physical Examination
MEDICAL EXAMINER See Coroner
MEDICAL FOUNDATION of Mount Valerian See Foundations
MEDICAL INSPECTION See Schools
MEDICAL JOURNALS See Journals
MEDICAL JURISPRUDENCE See also Medical Abstracts at end of letter M Index to Organization Section
can heat produce fracture of skull and hemorrhage after death? 525
court claims for dermatitis from clothing 286
court decides pledges hospital must be paid 882
court overrules medical board in refusing to register Australia 1056
criminal psychiatric element in 1057
damages for puerperal fever 803
determining time of death [Vuelter] 750—ab
New Jersey supreme court upholds Plager a blood pressure business 512
protest judicial confiscation of patient's record Brussels 603
responsibility in industrial medicine 219
swelling and discoloration not signs of death from freezing 1299
tests for mercury poisoning by ingestion minimum lethal dose 811
MEDICAL LIBRARY See Library
MEDICAL MINISTRIES of 1937 439
MEDICAL PATENTS See Patents
MEDICAL PRACTICE ACTS See Medical Abstracts at end of letter M
MEDICAL PROFESSION See Physicians Surgeons
MEDICAL RESEARCH Council (promotes clinical research) 441 (action of radiation) 1052
Institute established by auto workers Detroit 717
MEDICAL SCHOOLS See Schools Medical
MEDICAL SERVICE See also Health Hospitals Medical Abstracts at end of letter M Index to Organization Section
committee to study sickness care Wis 1996
Federalization See Medicine state
for indigent and A M A 32—E 436—E 1047—E
for indigent new polyclinic Rio de Janeiro 148
free abuse in public hospitals Paris 144 885
free to all New Zealand 1290
of prisons Institute of Medicine of Chicago survey 1548
State See Medicine state
to ships at sea radiomedical center closed Italy 1378
what is involved in adequate care [Welshotten & Bailey] *2136 2144—E

- MEDICAL SOCIETY** See also Societies Medical and list of societies at end of letter S of County of Kings Library report 54 of North Carolina opposes federal control of practice 719
- MEDICAL STATISTICS** See Statistics Vital Statistics
- MEDICAL STUDENTS** See Students Medical
- MEDICAL SUPPLIES** domestic encourage use Japan 2754
- MEDICAL SYNDICATE** recommends higher fees France 369
- MEDICAL WEEK** annual Budapest 1829 International in Switzerland 441 1827
- MEDICINE** See also Economics Medical Education Medical Medical Service Physicians Surgeons Surgery etc Index to Organization Section Academy See Medicine ancient school of methodist 1567 Aviation See Aviation colonial problems in French colonies 1375 Cults See Cults exhibits etc at Paris exposition 286 Forensic See Medical Jurisprudence future [Yusser] *323 general and otolaryngology [Shurly] *2027 history murals at Washington fair 719 history of fight against disease 2081 In Russia See Russia Industrial See Industrial Internal See Internal Medicine International Congress of as applied to Physical Education (first) 1137 *Medicine Today and Tomorrow* See Journals Military See Military organized care of indigent sick 1047-E Practice See also Physicians practicing practice future in New Zealand 1290 practice portrayed in Cronin's *The Citadel* 956-E practice valuable experience on island of summer vacationists 1191-ab Preventive See Preventive Profession of See Physicians Surgeons etc progress Budapest Royal Medical Society centenary 1292 Regulation See Medicine state relation to public and British Medical Association 1553 social chair of established at Faculté de médecine 1289 (Crouzon first occupant) 1648 social specialists in France 723 socialized decreases number of new students Vienna 1465 **SOCIALIZED MEDICINE IN THE SOVIET UNION** by H. E. Sigerist 1911-E Specialization in See Specialization state and the physician Italy 1213 state beginnings Australia 1055 state federal regimentation 32-E 436-E (Florida protests against) 511 (North Carolina protests against) 719 (American Foundation proposals) 1290-E (petitions to medical societies and A M A) 1728-E 1816-E state New Zealand 1290 (doctors to receive 1£ per head annually) 1291 surgery and tend to converge 1111-ab warfare (future) and 1646
- MEDICOLEGAL** See Medical Jurisprudence Medicolegal Abstracts at end of letter M
- MEES S Stripes** See Nails
- MEGALOCOLON** See Colon
- MEHARRY** Medical College Council action on 156
- MEIGS S Syndrome** See Hydrothorax
- MEINICKES S Reaction** See Syphilis serodiagnosis Tuberculosis serodiagnosis
- MEK** used in lining beer cans toxicity 891
- MELANCHOLIA** See also Mental Depression Involuntal estrogen therapy (Progynon and Progynon B) [Suckle] *203 (theelin) [Schubert] 1312-ab [Ault & others] *1786
- MELANOMA** histogenesis [Nagzlo] 1675-ab
- MELATOL** 2085-BI
- MELERA** neonatorum diarrhea complicating raw apple for [Corcoran] 166-ab
- MEMBRANES** See also Fetus membranes Mucous Membranes (cross reference) Shrapnell's Membrane bucconasal (persistent) in new born [Lemere] *347
- MENIERES Disease** See Vertigo aural
- MENINGES** arachnoiditis (chronic) obliterate spinal subarachnoid space [Barker & Ford] *785 hematoma posttraumatic juxtapural [Krebs] 994-ab hemorrhage of new born [Riviere] 1160-ab hemorrhage spontaneous subarachnoid [McDonald] 466-ab (prognosis) [Strauss] 1075-ab hypertensive hydrops [Davidoff] 1375-ab infection (epidural) [Browder] 617-ab Tuberculosis See Meningitis tuberculous
- MENINGITIS** See also Chorionmeningitis Meningo Encephalitis epidemic Alaska 514 epidemic diphtheria sheep serum for 804 experimental [Brannham] 1234-ab in leukemia and in Wells disease [Winkentof] 1590-ab
- MENINGITIS—Continued** low leptomeningitis in cauda equina syndrome [Devic] 2172-ab lymphocytic chronic arachnoiditis obliterate spinal subarachnoid space after [Barker & Ford] *785 meningococcal acute hemolytic anemia during [Harvey & Janeway] *12 meningococcal complicating septicemia [Ravitch & Washington] *1122 meningococcal epidemic US 1990-E meningococcal second attack recovery after [Schaffer] 825-ab pneumococcal (primary) [McDonald] 1854-ab pneumococcal prontosil soluble intrathecally in [Millitt] *2138 sequelae (ocular and aural) prevention [Eagleton] 823-ab serous in swineherds [Fatzner] 1083-ab streptococcus 590-E treatment sulfanilamide [Harvey & Janeway] *12 [Martin] 1675-ab tuberculous clinical aspects [Schlapobersky] 1320-ab tuberculous etiology [Nobécourt] 1083-ab tuberculous trypan reaction [Pongratz] 320-ab [Baxter] 1762-ab vaccination against after mastoiditis [Goldman & Herseberger] *1254
- MENINGOCOCCUS** antiserum protection lacking [Brannham] 1235-ab infection (masked) [Kummerling] 630-ab infection sulfanilamide plus serum therapy [Brannham] 312-ab Meningitis See Meningitis septicemia complication [Ravitch & Washington] *1122 strains in US 1990-E
- MENINGO ENCEPHALITIS** and rubella [Read] *654 tularemic pneumonia with [Winter & others] *258
- MENOPAUSE** age in women with breast cancer [Olch] 903-ab Artificial See also Castration bleeding after [TeLinde] 828-ab complications arthritis, 1299 complications Involuntal melancholia estrogens for [Suckle] *203 [Ault & others] *1786 complications vaginitis endocrine treatment [Lewis & Adler] *1873 drugs used to shorten 300 pregnancy after cases 528 syndrome endocrine treatment [Pratt & Thomas] *1875 syndrome irradiate pituitary [Zollinger] 1157-ab treatment 295
- MENORRHAGIA** See Menstrual disorders
- MENSTRUATION** See also Menopause after irradiation and ovarian tumor 1836 allergy [Singer] 1677-ab asthma preceding 893 blood sugar [Auerbach] 1493-ab deficient ovary irradiation in small doses [Robecchi] 318-ab Disorders See also Amenorrhea Dysmenorrhea disorders caused by granulosa cell tumors [Ron Pallos] 397-ab disorders menorrhagia [Schulze] 1075-ab disorders menorrhagia and metrorrhagia endocrine products for [Burch & others] *1869 effect on gonorrhea diagnosis [Puglisi] 2172-ab fistulas (transubal) [Mallphant] 829-ab function relation to ascites in juvenile liver cirrhosis [Hartwell & Johnson] *1800 hemoptysis [Sattler] 2025-ab inhibited by testosterone propionate [Zuckerman] 1857-ab pain and gonorrhea cure 1837 periodicity [Gunn] 1941-ab purpura [Smith] 1760-ab tampons cause cervicitis? 381
- MENTAL ABILITY** See Intelligence
- MENTAL DEFECTIVES** care of New York City ends 790 diffuse white matter gliosis in [Meyer] 1492-ab fertility of parents of feeble-minded Switzerland 805 phenylpyruvic oligophrenia [Jervits] 2098-ab premature birth [Brander] 322-ab
- MENTAL DEPRESSION** See also Melancholia treatment benzedrine sulfate [Wilbur & others] *549 (Council report) *2064
- MENTAL DISEASE** See also Dementia Praxic Hospitalists psychiatric Insanity Psychiatry chosis care of patients [Wehlgan] 543 (laws revised Austria) 1465 etiologic atropine or noratropine given after insulin [Quigley] *1363 [Quinlan] 2006-C etiologic bromide poisoning [Clarens] 1582-ab experimental catatonla from typhoid bacillus toxin [Vilella] 1237-ab
- MENTAL DISEASE—Continued** heredity and neuropathic constitution common report, 1991-E metabolism disorders and 371 suicide in relation to 706-E treatment theila [Ault & others] *1786
- MENTAL HOSPITALS** See Hospitals psychiatric
- MENTAL HYGIENE** International Congress on 56 Louisiana Society organized 213
- MENTOS** 2156-BI
- MERCUPURIN** See Diuretics
- MERCURIN** action of [Herrmann] 167-ab N N R 133
- MERCUROUS CHLORIDE** See Mercury
- MERCURY** diuretics 2007 leukocytes modified by [de Lillo] 00-ab mercurous chloride use in lactating mother effect on child 67 poisoning by ingestion tests for minimum lethal dose 811 treatment of scalp hair discolored after permanent wave [Simeas] 92-ab
- MERSALYL** See Diuretics
- MESENTERIC Lymphadenitis** See Lymphatic System
- MESENTERY** ganglioneurofibromatosis with malignant degeneration [Jentzsch] 541-ab
- METABOLISM** See also Amino Acids Carbohydrates, Cholesterol Iron Uric Acid etc basal action of coffee on 1466 basal effect of depth and type of respiration 1138 basal fatigue with low rate 811 basal of children vs nutrition [Maroney] 741-ab basal of 106 healthy girls Boston 715-E disorders and psychosis 371 effect of exercise [Haidt] 1579-ab effect of milk 968 in generalized fibrous osteodystrophy [Bruner] 92-ab liver as commissariat of body [Mann] 1311-ab migraines and [Frank] 1767-ab role in rickets [Gubner] 238-ab
- METAL** Plating See also Chromium Copper plating skin infection from 1064 salts prolong action of posterior pituitary solution [Dodd] 1318-ab salts relation to x ray skin 1140
- METHANE** mine gases effects 975
- METHANOL**, industrial hazards [McConnell] *764
- METHEMOGLOBINEMIA** after sulfanilamide [Paton] 310-ab (use of methylene blue) [Wendel] 1216-C
- METHENAMINE** as urinary antiseptic [Walther] *1000 Treatment See Korsakoff's Syndrome
- METHUEN** ancient school of medicine 1567
- METHYL CHLORIDE** poisoning 2008
- METHYL ROSANILINE** See Burns treatment
- METHYL SALICYLATE** remove adhesive tape with oil of wintergreen [Jackson & Jackson] 294-C
- METHYL BUTYL KETONE** industrial hazard [McConnell] *765
- METHYLENE BLUE** See Methylthionine Chloride
- METHYL ETHYL KETONE** toxicity of used in lining beer cans 891
- METHYL PROPYL KETONE** industrial hazard [McConnell] *765
- METHYLTHIONINE CHLORIDE** as urinary antiseptic [Waltier] *1000 Injection to stain leprosy nodes and tubercle bacilli 291 1920 Treatment See Methemoglobinemia
- METRAZOL** Therapeutic Convulsions See Demerita Praecox
- METROKIN** See Menstrual disorders
- MEYENBERG** Evaporated Goat Milk 1815
- MICHAEL S C P Tablets** 600-BI
- MICHEL FERRIN** death 510
- MICROCEPHALY** 893
- MICROSAN** Mosene 1060-BI
- MICROSCOPES** fluorescence of viruses [Hagemann] 243-ab representation of surfaces of living organs [Singer] 226-C
- MICTURITION** See Urination
- MIDOL** 2157-BI
- MIDWIVES** at Negro birth 1733 legal regulation France 1922
- MIGRAINE** See also Headache diagnosis (differential) 100 metabolism and [Frank] 1767-ab syndrome [von Storch] 1233-ab treatment 67 treatment carbohydrate limitation [Porges] 320-ab treatment ergotamine tartrate 100 (reply) [von Storch] 977 treatment in women by testis oxidation ferments [Zajack] 94-ab
- MILAN** Herb Compound 2156-BI
- MILAN** University balneary donated to 2152
- MILITARY Hospitals** See Hospitals
- Surgeons** ninth International Congress 1299 Surgeons of the United States Association 882

MILK Acidified See Infants feeding
acrophilus method of diagnosis in bacillary
dysentery [Silverman] *1021
allergy and psychical aversion 376
borne typhoid 1207
ceramic acid content [Reedman] 988—ab
Challenger Brand Evaporated Milk 1127
concentrated for canaps 66
consumption insufficient England 802
dietary value 2149
effect of boiling on nutritive value [Graham]
909—ab
effect on growth and metabolism 968
goat leishmania cultured in [Laurinsich]
1860—ab
goat Meyenberg Evaporated 1815
growth factor in grass [Kohler] 989—ab
human antiseptic properties 1610—F
human morphine and calomel in effects on
child 67
Macnam Brand Evaporated Max 1 Mum
Brand Evaporated Sunny Skies Brand
Evaporated 1455
pasteurization phosphatase test to detect un-
derpasteurized [Gelger & Davis] *1363
Phyllis XXX Brand Evaporated 379
Schaaf's "Favored For Flavor" Evaporated
433
skimmed supplementing typical Indian diets
[Aykroyd] 1081—ab
sold 973
streptococcus in stored at atmospheric tem-
peratures [Pullinger] 1856—ab
substitutes for 222
Suffolk Brand Evaporated Milk 1201
vitamin D produced by feeding cows irra-
diated yeast Council report 1814
Whole Milk for the Whole Family Irradiated
Evaporated Milk Institute leaflet 31
MILKER S warts [Bonnevie] 85—ab
MILLER JOSEPH L, death portrait 520
MILWAUKEE County See Index to Organiza-
tion Section
MIMS (J H) Iron Tonic 2085—BI
MINERAL LIFE 2156—BI
MINERAL OIL See Petroleum liquid
MINERAL WATERS Bacillus coli content 58
bathery donated to Villan University 2152
radioactive thermal waters 368
MINERALS and intestinal flora 1638—E
loss through skin [Freyberg] 1670—ab
MINERS coal interhemorrhagic spirochetosis
in 443 1826
coal tuberculosis in Belgium 602
MINES gases their effects 975
MISSISSIPPI VALLEY tuberculosis meeting 964
MISSOURI State Medical Association See In-
dex to Organization Section
MITA E president of Formosan U 1921
MOLD cephalosporium as epiphyte on renal
calculus [Oomen] 1086—ab
growth in foods not pathogenic to man 300
MOLLE Hydralform See Uterus
MOLLINGER S Original White Salve 1741—BI
MOLLITA classification [Martin] 824—ab
MONKEYS tuberculous infection [Nègre] 241
—ab
MONONUCLEOSIS infectious etiology [Ny-
feldt] 834—ab
infectious aerodiagnostics [Durupt] 1237—ab
MOONE'S Emerald Oil 728—BI
MOORE JOHN W death 1552
MORGAGNI Syndrome See Frontal Bone
MORLAND EGBERT editor of *Lancet* 516
MORPHINE action on kidney 1137
addict (cured), postoperative medication for
1839
addiction effect of season and diet [Amsler]
1240—ab
role in precipitating biliary colic [Walters &
others] *1591
sulfate vs analgesic action of pantopon
[Hayman & Fox] *1813
use in lactating mother effect on child 67
MORPHUATE Sodium See Fascia hernia
Sodium morrhuate Varicose Veins treat-
ment 1839
MOSQUITOES bites desensitizing 896
repellents 299
MOSS Spanish [Metzger] 1076—ab
MOTHERS See Maternal
MOTH proofing toxicity of sodium aluminum
silicofluoride 1929
MOTION PICTURES See also Index to Or-
ganization Section
film on aphyllis reservations on 958—E
of radium refining processes 440
MOTOR See Automobiles
MOUNTAIN SICKNESS See Altitude high
MOURIER DR 145
MOUTH Sea also Gums Jaws Lips Teeth
buccopharyngeal sepsis in typhoid [Orgaz]
396—ab
burns of mucosae from sodium perborate 731
tuberculous ulcers [Ormerod] 1856—ab
MUCIN virulence of Haemophilus influenzae
1293—E
MUCK S Epinephrine Probe Test See Epineph-
rine
MUCOSA Pattern See Esophagus roentgen
study
Stomach roentgen study
MUCOUS MEMBRANES See Mouth Nose
etc
MULFORD H K dies 1462

MUNIZ S Leukotomy See Brain surgery
MUSCAE volitantes 523
MUSCLES See also Myasthenia Myositis
adductors contraction as sign of appendicitis
[Riche] 2023—ab
anomalies supernumerary of leg 371
Atrophy See Atrophy
chronaxia alteration by sympathetic [Wei-
ser] 2109—ab
disease bile pigments elimination increased
in 1467
Dystrophy See Dystrophy
fibrillation in focal infection [Slauck] 319
—ab
injection into See Injection Intramuscular
ischioacervosus surgical treatment of im-
potence 070
myelogram in lung abscess [Bertola] 1238
—ab
Ocular Paralysis See Eyes paralysis
Pain in See Myositis
psoriasis (acute) roentgen sign [Varcia Fu-
entes] 470—ab
aall water distribution in nurallings [Kerpel
Fronius] 750—ab
scalenus anticus syndrome and cervical rib
877—E
spasm (facial) surgical treatment [Cole-
man] 165—ab
spasm (tonic) of levator and coccygeus and
piriformis massaga relieves [Thiele] *1271
twitchings (generalized) myokymia 1835
MUSEUM of dermatosyphillographic models
(Deleucw collection) 888
MUSIC muscogenic epilepsy [Crichtley] 171
—ab
playing wind instruments in pulmonary tuber-
culosis 454
MUSSEL quarantine California 437
MUSTARD GAS See *d*-Chloro Ethyl Sulfide
MUTINES in human milk 1640—E
MYALGIA Epidemic See Myositis epidemic
MYASTHENIA gravis case report necropsy
[Barton & Branch] *2014
gravis choline esters in [Fraser] 1080—ab
gravis clinical review [Kennedy] 1578—ab
gravis prostigmin in diagnosis [Gammon &
Schele] *413 (quinine as adjunct to)
[Harvey] 1488—ab
gravis prostigmin (orally) in treatment
[Viets & others] *1956
induced with thymus extract and tissue 147
MYCOSIS See Actinomycosis
Cutaneous See Epidermomycosis
MYDRMATIC accidental use of scopalamine for
homatropine [Dameshek & Feinsilver] *561
atropine psychosis after 1931
MYELINATION See Spinal Cord
MYELOCYTES See Bone Marrow
MYELOGRAM See Muscles
MYELOMA [Transbol] 1322—ab
plasma cell and hyperproteinemia [Schu-
macher] 1757—ab
MYELOSIS See Bone Marrow
MYIASIS intestinal from Sarcophaga larva on
cold meat [Bryan] *573
MYOCARDITIS acute precordial leads in
[Mortensen] 544—ab
diphtheritic [Begg] 87—ab
MYOCARDIUM See Heart Muscle
MYOGLOBIN research on 1467
MYOKYMIA See Muscles twitchings
MYOMA Sea Uterus tumors
MYOSITIS epidemic in children [Pickles]
1080—ab
ossificans (progressive) treatment 1567
MYXEDEMA after thyroid resection 1747
angina pectoris and [Froment] 89—ab
MYXO ENDOTHELIOMA within velum pendu-
lum [Simeoni] 242—ab
MYXOFIBROMA of apermatic cord [Wolbarst]
*1623

Medicolegal Abstracts

ABANDONMENT OF PATIENTS malpractice
in relation to 1071
ADVERTISING statutory restrictions upheld
819
untrue statements revocation of optometrist's
license 1573
AGRANULOCYTOSIS trauma in relation to
1305
workmen's compensation in relation to 1305
ANEMIA Hart's copper iron patent Infringe-
ment of 533
aplastic streptococcal septicemia in relation
to 459
ANESTHETICS ether Insurance accident in
relation to death from 1666 1754
formalin mistakenly used for 305
Insurance accident in relation to 1666 1754
ANIMALS Sea Animal Experimentation
ANIMAL EXPERIMENTATION dogs distrib-
uted from pound to medical schools valid-
ity of ordinance 1754
APOMORPHIN See Narcotics
ARSENIC poisoning workmen's compensation
in relation to 388
ARTERIOSCLEROSIS workmen's compensation
in relation to 1843
ASSAULT AND BATTERY operations unau-
thorized emergency must be proven 161

ASTHENIA neurocirculatory trauma in rela-
tion to 1935
AUTOPRIES insurer's right to 460
Justice of the peace's right to order 387
reports as privileged communications 1481
unauthorized illegal order of justice of the
peace no justification 387
unauthorized liability of insurance company
387
BARBITURIC ACID DERIVATIVES AND COM-
POUNDS venereal death from insurance
accident in relation to 1491
BRAIN abscess of insurance accident in
relation to 1306
abscess of over exertion in relation to 1306
softening of herniotomy as cause of 1306
BRONCHITIS chronic workmen's compensa-
tion in relation to 738
CANCER see also Sarcoma
Insurance life in relation to 387
trauma in relation to 1480
CHILD BIRTH Sea Malpractice
CHIROPRACTIC cerebral hemorrhage and death
following adjustment 233
licenses revocation moral turpitude in
relation to murder 1936
licenses revocation statuta of limitations
inapplicable 1936
standard by which practitioner judged 233
CHLORINE bronchitis chronic following ex-
posure to chlorine gas 738
COLDS workmen's compensation in relation to
1480
COMPENSATION OF PHYSICIANS dentists
retention of dental plate for fee 1935
hospital's right to recover for medical ser-
vices 534
liability of father of minor 306
witnesses expert attorney's right to obligate
client to pay 162
witnesses expert refusal to testify before
receipt of fee 2166
CONTENT OF COURT injunction restraining
unlicensed practice of medicine violated 616
witnesses expert refusal to testify before
receipt of fee 2166
CORPORATIONS embalming cooperative asso-
ciations benefits not confined to members
738
optometry right to practice 306 1228
DEATH certificates privileged communications
in relation to 1481
DENTAL PRACTICE ACTS advertising statu-
tory restrictions validity of 810
enforcement complaint framed in terms of
statute valid 1227
enforcement injunctions to restrain enforce-
ment 819
examinations grades failure of act to pre-
scribe passing grade 533
examinations subjects board's right to select
subjects 533
examinations subjects curriculum of dental
schools adopted by reference 533
examining boards delegation of legislative
authority to 533
licenses revocation moral turpitude in
decent exposure in relation to 1936
offices restrictions on ownership valid 1227
repeal reenactment with amendments effect
of 1936
schools delegation of legislative authority
to 533
schools practices included in the curricula
legislative adoption by reference 1227
DENTISTS See also Dental Practice Acts
Malpractice
dental plates retention for fee fraudulent
conversion 1935
DIABETES gangrene workmen's compensation
in relation to 2004
DISEASES See also particular diseases
pain as a disease 902 1152
DISFIGUREMENT workmen's compensation in
relation to 902
DOGS See Animal Experimentation
DRUGS osteopaths right to use denied 76
proprietary medicines pharmacist's liability
for injury from use of 1072 1843
EMBALMING cooperative associations bene-
fits not confined to members 738
ENDOCARDITIS malignant workmen's com-
pensation in relation to 2166
EUGENICS sterilization vasa deferentia liga-
tion of in relation to 1574
EVIDENCE See also Malpractice evidence
Privileged Communications Workmen's
Compensation Acts evidence
complaints and statements of patient to phy-
sician 1665 1935
complaints and statements of persons exam-
ined for purposes other than treatment
738 1843
gunpowder test admissibility of paraffin
mould 1573
hospital records admissibility in general
1306
paraffin mould admissibility 1573
roentgenograms admissibility 161
roentgenograms interpretation of qualifica-
tion of witness 161
witnesses expert qualifications roentgen-
ologists 161

- Medicolegal Abstracts**—Continued
- EVIDENCE**—Continued
- witnesses expert opinion testimony basis of complaints and statements of patients 1935
- witnesses expert opinion testimony, basis of complaints and statements of person examined for purposes other than treatment 1843
- witnesses, expert refusal to testify before receipt of fee 2166
- EYE** blindness syphilis and trauma in relation to 901
- FEDERAL COMMUNICATIONS ACT** radio electrical transmissions produced for foreign broadcast 1393
- FRAUDULENT CONVERSION** dental plate retained by dentist for fee 1935
- GANGRENE** diabetic workmen's compensation in relation to 2094
- GUNPOWDER** paraffin test admissibility in evidence 1573
- HARRISON NARCOTIC ACT** addicts, prescribing for 1753
- addicts sales by physician to 1844
- administering as constituting sale 1844
- constitutionality upheld 1753
- entrapment of physician 1844
- moral turpitude in relation to violation of act, 2015
- osteopaths registration denied 76
- sales administering as constituting 1844
- sales prescribing as constituting 1753
- HEARTSTROKE** See also Sunstroke
- workmen's compensation in relation to 234
- HEMIPLEGIA** workmen's compensation in relation to 1843
- HEMORRHAGE** cerebral chiropractic adjustment in relation to 233
- cerebral workmen's compensation in relation to 1843
- HERNIA** operation for as cause of softening of brain 1306
- strangulation workmen's compensation in relation to 1152
- trauma in relation to 1935
- HOSPITALS CHARITABLE** nurses negligence of liability for 305
- pay patients liability to 1844
- taxes exemption from 1665
- HOSPITALS FOR PROFIT** care to be exercised by 983
- childbirth failure of employees to observe symptoms of eclampsia 2084
- burns electric lamp 984
- judgment for malpractice against attending physician effect on hospital's liability 984
- narcotized patients injury to when left unattended 983
- nurses relative liability of physician and hospital for negligence of 984
- nurses undergraduate negligence of 983
- patient left unattended by nurse 983
- tuberculosis contracted by baby from nurse 1306
- HOSPITALS GOVERNMENTAL** orderlies workmen's compensation in relation to 1480
- workmen's compensation in relation to 1480
- HOSPITALS IN GENERAL** fees priority in payment from decedent's estate 1226
- medical services hospital services as embracing 1226
- medical services hospital's right to recover for 534
- nurses services hospital's right to recover for 534
- records admissibility in evidence 1306
- records privileged communications in relation to 1451
- HYPERTENSION** workmen's compensation in relation to 1843
- HYPERTHYROIDISM** trauma in relation to 1935
- INJUNCTIONS** See Dental Practice Acts enforcement Medical Practice Acts enforcement Optometry Practice Acts enforcement
- INSURANCE ACCIDENT** accidental means construed 1481 1666 1754
- anesthetics asphyxiation following 1754
- anesthetics death from 1666
- brain abscess over exertion in relation to 1306
- narcotics apomorphin death from 1754
- sacro iliac strain preexisting anomalies of spine in relation to 738
- septicemia, trauma and aplenic anemia in relation to 459
- 'total and permanent disability' 1844
- veronal death from 1481
- INSURANCE, HEALTH** disease construed 1152
- paralysis insurer's right to demand tests of blood and spinal fluid 616
- syphilis- insurer's right to demand tests of blood and spinal fluid 616
- 'totally disabled' construed 1843
- tuberculosis pulmonary total and permanent disability in relation to 306 1307
- INSURANCE IN GENERAL** autopsies reasonableness of demand by insurer 460
- autopsies unauthorized illegal order of justice of the peace no justification 387
- health of applicants cancer 387
- health of applicants representations of applicants when fraudulent 387
- INSURANCE LIFE** 'attended by a physician construed, 387
- pneumonia lobar n bacterial trouble ' 1228
- JAILS** maintenance of as governmental function 1480
- venereal disease contracted by prisoner, liability of municipality 1480
- JUSTICES OF THE PEACE** autopsies, right of justice to order, 387
- LIENS** dental plate retained by dentist for fee fraudulent conversion 1935
- MALPRACTICE** abandonment of patient 1071
- action nature of, whether tort or contract 984
- anesthesia formalin mistakenly used for 305
- childbirth eclampsia failure to observe symptoms of 2084
- childbirth prophylaxis instilled in baby's eyes by nurse liability of physician, 1665
- chiropractors cerebral hemorrhage and death following adjustment 233
- chiropractors standard by which judged 233
- contract see action supra
- damages results of original injury not chargeable to physician 388 819
- dentists fracture of patient's jaw duty to disclose 1394
- dentists osteomyelitis following tooth extraction 1072
- dentists skill and care required 1072
- duty to patient delegation of 305 984
- duty to patient disclosure of injury from treatment 1394
- eclampsia failure to observe symptoms of 2084
- employers physician employee an independent contractor 819
- evidence customary procedures admissibility of testimony concerning 305
- evidence res ipsa loquitur foreign bodies left in patients 1393
- evidence witnesses expert categorical answer to lengthy hypothetical question not required 76
- evidence witnesses expert conclusiveness of testimony 1573
- evidence witnesses expert lay testimony as basis of opinion 161
- evidence witnesses expert necessity for 306 1753
- evidence witnesses expert nonsectarian physician may testify concerning sectarian practice 233
- evidence witnesses lay admissibility of testimony 161 1573 1753
- eye injury attributed to negligent treatment of gonorrheal ophthalmia 820
- eye injury attributed to prophylaxis 1665
- foreign bodies left in patients res ipsa loquitur 1393
- foreign bodies left in patients sponges safety devices not supplied by hospital 1393
- formalin mistakenly used for novocaine 305
- fractures amputation of foot without consent 161
- fractures gas gangrene necessitating amputation of arm 234
- fractures inflammation of bone following fracture of leg 306
- fractures jawbone fractured by dentist duty to disclose injury to patient 1394
- fractures shortening of leg following treatment 1573
- fraudulent representations accrual of right of action 1151
- gangrene following fracture 234
- gonorrheal ophthalmia injury attributed to negligent treatment 820
- gonorrheal ophthalmia injury attributed to prophylaxis 1665
- independent contractors physician not an employee 819
- infected wound failure to recognize septic condition 1753
- injury to patient duty to disclose 1394
- limitation of actions accrual of right of action 1151
- limitation of actions tort not contract basis of action 984
- negligence causal relation to injury validity of instruction to jury 234
- novocaine formalin mistakenly used for 305
- nurses hospital physician's liability for negligence of 305 984 1665
- operations consent emergency as justification for unauthorized operation 161
- ophthalmia gonorrheal injury from prophylaxis 1665
- ophthalmia gonorrheal negligent treatment of 820
- osteomyelitis tooth extraction as cause of 1072
- silver nitrate instillation by hospital nurse liability of physician 1665
- skill and care standards by which dentists judged 1072
- skill and care standards by which sectarian practitioner judged 233
- skill and care standards competency of witness to testify concerning 76 233
- skill and care standards when disease first appears in particular locality 76
- sponges- accidentally left in patient 1393
- MALPRACTICE**—Continued
- sponges accidentally left in patients, res ipsa loquitur 1393
- sponges safety devices not supplied by hospital, 1393
- workmen's compensation award as bar to suit 1666
- MEDICAL PRACTICE ACTS** contempt of court violation of injunction restraining illegal practice 616
- diagnosis absence of as negating practice of medicine 983
- diseases pain as a disease 902
- enforcement injunctions to restrain enforcement, federal court's jurisdiction 1665 2015
- enforcement- Injunctions to restrain violations 2015
- enforcement injunctions to restrain violations subterfuge to evade injunction 616
- enforcement quo warranto burden of proof 002
- examining boards schools naturopathic reputation determinable by board 233
- Harrison Narcotic Act violation of as involving moral turpitude 2015
- licenses aiding unlicensed practitioner license no bar to prosecution 233
- licenses revocation certiorari determinative only of board's jurisdiction 2015
- licenses revocation complaint allegation of violation of medical practice act necessary 305
- licenses revocation complaint charge of dispensing drugs insufficient 2015
- licenses revocation crimes commutation of sentence 1936
- licenses revocation fraud in procuring license 305
- licenses revocation moral turpitude conviction of offense involving 901 2015
- licenses revocation order of revocation sufficiency of 2015
- licenses revocation prohibition, writ of as appeal procedure 305 1936
- licenses revocation statute of limitations inapplicable 1936
- licenses revocation venereal diseases failure to report 901
- licenses revocation wilful disobedience of law 901
- limitations of actions revocation proceedings 1036
- moral turpitude, indecent exposure in relation to 1936
- 'moral turpitude' violation of Harrison Narcotic Act in relation to 2015
- naturopathy applicant's school of graduation not recognized 233
- naturopathy defined 1665
- repeat reenactment with amendments effect of 1936
- school of healing incidental demonstrations not practice of medicine 983
- subterfuge lease of cancer hospital to licensee 616
- MEDICAL RESEARCH** See Animal Experimentation
- MEDICAL SERVICES** hospital services as constituting 1226
- necessaries of life as including 306
- NARCOTICS** See also Harrison Narcotic Act amendment of unconstitutional act validity of amendment 1227
- apomorphin insurance, accident, in relation to death from 1754
- title of narcotic act insufficient 1227
- NATUROPATHY** definition of term, 1665
- school of graduation of applicant not recognized 233
- NURSES** hospital a right to recover for nurses services 534
- negligence of liability for 305 683 981 1306, 1665
- student workmen's compensation in relation to 902
- workmen's compensation in relation to 902 1573
- OPHTHALMIA** gonorrheal negligent treatment 820
- gonorrheal prophylaxis injury from 1665
- OPHTHALMIA NEONATORUM** prophylaxis injury from 1665
- OPTOMETRY PRACTICE ACTS** corporations practice of optometry by 306 1228
- enforcement injunctions to restrain enforcement, federal court's jurisdiction 2015
- enforcement injunctions to restrain violations 2015
- examining boards exercise no judicial function 1573
- licenses revocation advertisements containing untrue statements 1573
- licenses revocation writ of prohibition to restrain 1573
- OSTEOPATHY** drugs right to use denied 76
- narcotics registration under Harrison Narcotic Act denied 76
- PARAFFIN** mould admissible in evidence 1773
- PARALYSIS** insurer's right to demand tests of blood and spinal fluid 616
- workmen's compensation in relation to 1843
- PARESIS** herniotomy in relation to, 1706

Medicolegal Abstracts—Continued
PATENTS acmea Hart's copper iron patent, infringement of 533
PATERNITY vasa deferentia ligation of in relation to 1574
PHARMACISTS drugs liability for injury following use of 1072 1813
poisons failure to label as required by law, 7015
prescriptions error in filling 2016
PNEUMONIOSIS silicosis workmen's compensation in relation to 1394
PNEUMONIA lobar, a bacterial trouble 1098
POISONS label pharmacists' failure to observe statutory requirement 2016
POISONING arsenic workmen's compensation in relation to 388
POTT'S DISEASE workmen's compensation in relation to 1071
PRESCRIPTIONS error in filling pharmacist's liability 2016
PRIVILEGED COMMUNICATIONS autopsy records 1481
death certificates 1481
disclosures by examining physicians, when admissible 739
hospital records 1481
waiver testimony of patient as constituting 1574
waiver wife presence during examination as constituting waiver 39
waiver wife right of second wife to waive 739
PROPRIETARY MEDICINES See Drugs
RADIO electrical transmissions production of for foreign broadcast 1393
ROENTGENOGRAMS see Evidence
SACRO ILLAC STRAIN insurance accident in relation to 738
workmen's compensation in relation to 1226
SARCOMA see also Cancer
spinal workmen's compensation in relation to 388
trauma in relation to 388 1666
SCHOOLS demonstrations of theory of healing not practice of medicine 983
dental delegation of legislative authority to 533
dental practices included in the curricula legislative adoption by reference 1227
autopathologic reputability determinable by medical examining board 233
SEPTICEMIA streptococcal trauma and splenic anemia in relation to 459
SILICOSIS See Pneumoconiosis
STERILITY ligation of vasa deferentia in relation to 1574
STRAIN (OVER EXERTION) See also Trauma
brain abscess in relation to 1306
ulcer duodenal perforation of in relation to 161
SUNSTROKE see also Heatstroke
workmen's compensation in relation to 234
SYPHILIS See Venereal Diseases
TAXES hospitals charitable when exempt 1665
TRAUMA see also Strain (Over Exertion)
abscesses pulmonary in relation to 162
agranulocytosis in relation to 1305
asthenia neurocirculatory in relation to 1935
blindness in relation to trauma and syphilis 901
cancer in relation to 1480
gangrene diabetic in relation to 2094
hernia in relation to 1935
hyperthyroidism in relation to 1935
sarcoma in relation to 388 1666
septicemia streptococcal in relation to splenic anemia and trauma 450
TUBERCULOSIS hospital's liability for disease contracted by baby from nurse 1306
pulmonary permanent and total disability in relation to 306 1307
spinal workmen's compensation in relation to 1071
tuberculoma of brain in relation to death 1071
ULCERS duodenal perforation of workmen's compensation in relation to 161
VAS DEFERENS ligation of in relation to sterility 1574
VENEREAL DISEASES See also Ophthalmia
Neonatorum
gonorrheal ophthalmia loss of eye attributed to negligent treatment 820
municipality's liability to prisoner who contracts disease 1480
report to police failure of physician to make 901
syphilis blindness in relation to trauma 901
syphilis insurance health in relation to 616
syphilis workmen's compensation in relation to 901
VEROVAL See Barbituric Acid Derivatives and Compounds
VITAL STATISTICS death certificates privileged communications in relation to 1481
WAR RISK INSURANCE ACT tuberculosis pulmonary total and permanent disability in relation to 1307
WITNESSES See Compensation of Physicians
Evidence Malpractice evidence

WORDS AND PHRASES accidental death 1751
accidental means 1481 1666 1754
accredited dental schools 533
attended by a physician 387
bacterial trouble 1228
contributing factor 234
disease 002 1152
drugs 2015
learned profession 1228
medical services 1226
moral turpitude 901 1036 2015
naturopathy 1666
permanent and total disability 306
practices included in the curricula 1227
resulting directly or indirectly from diseases in any form 459
total and permanent disability 1844
totally disabled 1843
wilful disobedience of law 901
WORKMEN'S COMPENSATION ACTS nb
secesses pulmonary 162
arsenic poisoning an occupational disease 388
arteriosclerosis n contributing cause of disability 1813
blindness trauma and syphilis in relation to 901
brain softening of herniotomy as cause of 1306
bronchitis 738
cerebral hemorrhage induced by excitement 1843
colds compensability of sequelae 1480
diabetes gangrene precipitated by trauma 2094
disfigurement 902
endocarditis malignant trauma in relation to death from 2166
evidence medical books 901
evidence medical rating board versus claimant's expert witnesses 162
eye loss of vision in impaired eye 162
gangrene diabetes and trauma in relation to 2094
heatstroke 234
hemiplegia induced by excitement 1843
hernia operation for as cause of softening of brain 1306
hernia pre existing strangulation of 1152
hospital orderly compensability of injury to 1480
hospitals governmental compensability of injury to orderly 1480
hypertension n contributing factor to disability 1843
malpractice by physician liability for 1666
medical treatment operations right of court to order 1393
medical treatment physicians selection of implied consent by employer 1843
nurses student as employees 902
pneumoconiosis silicosis 1394
poisoning arsenic 388
sacro iliac strain 1226
sarcoma of spine 388
sunstroke 234
syphilis sequelae of 901
tuberculoma of brain in relation to death 1071
tuberculosis contracted by nurse 1573
tuberculosis spinal 1071
ulcers duodenal perforation of 161

N

N A No 7 N A No 7½ 2156—B1
NAEGELI OTTO retired 806
NAILS arsenic effect on Mees's diagonal diagnostic stripes [Simons] 94—ab
cystine in tests for sulfur to improve nails 68
finger changes after gold dermatitis [Bellin fante] 398—ab
finger dactylitis from pushing back periunguinal tissue (manicure) [Nicholas] 395—ab
infection iodine plus dry dressing [Cummins] 1061—C
thumb hemiatrophy heredity [Montant] 541—ab
toenail ingrown [Helletz] 2097—ab
NAPHTHA industrial hazard, [McConnell] *764
NAPHTHALENE chlorinated industrial hazard [McConnell] *763 1386
NARCOLEPSY See Sleep disorders
NARCOTICS See also Morphine Opium etc
Medicolegal Abstracts at end of letter N
control advisory board on New York 1915
habit from taking secional and pentobarbital sodium 527
NASAL Tube See Duodenal Tube
NASOPHARYNX tumors (malignant) [Needles] 1759—ab
NATIONAL See also International and list of societies at end of letter S
Advisory Cancer Council 435—E (Dr Hebert director) 1373
Anti Syphilis Committee 1823
Anti Syphilitic League See Index to Organization Section
Bureau of Student Guidance Germany 445
Cancer Institute 434—E 883

NATIONAL—Continued
Canners Association Research Laboratory 1046—E
Committee for Mental Hygiene psychiatric fellowship 1552
Conference on Education Broadcasting See also Index to Organization Section
Conference on Educational Broadcasting (second) 719
Congress of Obstetrics and Gynecology, proposed for 1939 217
Education Association department of health and physical education 362—E
Eye Service See Index to Organization Section
Foundation for Infantile Paralysis See Foundations
Institute of Health new buildings 883
Research Council (Markle Foundation grant for endocrine research) 216 (officers) 514 (fellowships available) 1552
Safety Congress and Exhibit (sixth) Kansas City Mo 1134
Safety First Association report 442
NATURE'S Mineral Food 1832—B1
Vital Food 1925—B1
NATUROPATHY See also Medicolegal Abstracts at end of letter M
four solicitors for fake hospital drive sentenced Philadelphia 1133
NAUSEA See Seasickness Vomiting
NAVY U S (examination for commission) 720 1997 (sl in irritation and cancer in) [Peller] 1486—ab
NECK See also Throat
cellulitis requiring tracheotomy [New] 1672—ab
enlargement cause 1386
Fistula See Fistula
NECROSIS See Adrenals cortex Pancreas
NEEDLE See also Bursitis
found in heart at necropsy [Rea & Hoover] *266
NEGROES See also Index to Organization Section
attendants at births 1733
hemophilia in treatment [Pachman] 538—ab
hospital (first state owned) for Maryland 881
kidney calculi vs diet in Bantu [Vermooten] *857
medical students and graduates *671 *672
syphilis incidence [Holloway] 164—ab
thrombo angitis obliterans in [later] 235—ab
tuberculosis in 1375
urobilithiasis in [Cary] 168—ab
NEUBUTAL commercial monopoly of proprietary name 504
NEMOURS Foundation See Foundations
NEOARSPHENAMINE treatment intravenous medical shock after [Weinberg] 822—ab
treatment synthetic cevitic acid in [Land fisch] 834—ab
NEOSILVOL nose drops argyria after 977
NEOSYNEPHRINE chemical formula *2065
NEPHRITIS See also Pyelonephritis
atrophic chronic of childhood [Debré] 628—ab
clinical acute pathology pathogenesis [Bell] 985—ab
diet and 1202—E [Howard] 1654—C
experimental serum hypertension with [Arnott] 86—ab
glomerulonephritis (acute) 2079
glomerulonephritis (chronic) anemia of [Townsend] 2095—ab
hemolysis in in saponin systems [Herrald] 1845—ab
hemorrhagic acute in children [Lampolsky] 1488—ab
kidney calculus and 2088
treatment renal decapsulation [Ciminata] 318—ab
types of surgical aspect 2079
NEPHROPEXY See Kidneys movable
NEPHROSIS See Kidneys disease
NEPHROSTOMY See Kidneys surgery
NERVES See also Anesthesia Nervous System Neuralgia Neuritis Neurology etc
auditory intracranial surgery 2000
irritation from fibrosis after wrist operation 68
laryngeal recurrent (inferior) injury in thyroidectomy [Quinlan] 809—C [Young] 1295—C [Baton] 1562—C [Quinlan] 2087—C
Optic See also Neuritis optic
optic atrophy trypanamide for [Wayer] *1793
optic bilateral atrophy 1220
optic chiasma syndrome 886
optic chiasmatic arachnoiditis 2151
Peripheral See also Neuritis
peripheral injuries 218
phrenic (left) section for adhesio pericarditis [Martin] 1491—ab
Sciatic See Sciatica
splanchnic resection for abdominal pain [Diez] 176—ab
splanchnic resection effect on hypertension [Page] 389—ab

NERVES—Continued
 splanchicolicomes cardiac and pulmonary
 pains during [Leriche] 748—ab
 Trigeminal See also Neuralgia trigeminal
 trigeminal track encephalitis [Hoff] 244
 —ab
 vesicular chronaxy effect of electrolytes
 [Hurynowiczówna] 94—ab
NERVOUS SYSTEM See also Brain Spinal
 Cord
 Anonomic See Nervous System Sympa-
 thetic
 changes after arsphenamine [Russell] 1673
 —ab
 chemical transmission of nervous action
 Loewi research on 1828
 disease (functional) increase 1824
 disease (serum), [Kraus] 236—ab
 disease vitamin B₁ therapy [Helman] 1084
 —ab
Journal of Neurophysiology 1937
 organic bone formation in [Voss] 243—ab
 roentgen rays effect on 60
 Syphilis See Neurosyphilis
NERVOUS SYSTEM SYMPATHETIC, variation
 and 518
 muscle chronaxia altered by [Wetser] 2109
 —ab
 origin of hypertension of juveniles [Tourni-
 aire] 541—ab
 sun effect on 62
 Surgery See Sympathectomy
NEURALGIA peripheral intraspinal alcohol
 treatment [Spangenberg] 749—ab
 trigeminal lidopathic applying leeches over
 jugular veins for [Meyer] 543—ab
NEURITIS optic from aurilaminic [Bucy]
 *1007
 optic (retrobulbar) in pellagra [Flne] 904
 —ab
 peripheral calcium levels in Jake paralysis
 70
 polynuritis of pregnancy 527
NEUROBLASTOMA symmetrical adrenal
 metastasizing to right auricle [Doane &
 Solls Cohen] *578
 sympathetic roentgen aspect [Doub] *1188
NEURODERMATITIS 1656
NEUROFIBROMATOSIS See Ganglioneuro-
 fibromatosis
NEUROLOGY American Board of (labulated
 data on certification) 42 43 (examina-
 tion) 1287
 Child Neurology Research established by
 Friedsam Foundation 140
 Congress of French Alienists and Neuro-
 logists (41st) 1054
 Congress of German Neurologists 2151
 past and present [Viels] *399
NEUROPSYCHOSIS See Psychoneurosis
NEUROSIS See also Psychoneurosis
 definition in psychiatry 228
 national nurtering [Arling & Bateman]
 *1092
 speech index of neurotic behavior [Greene]
 *187
 vasomotor or Raynauds disease 1927
NEUROSYPHILIS arsphenamine jaundice in
 152
 asymptomatic [Carrera] 176—ab (cystometric
 study) [Brodie] 1938—ab
 prenatal [Cole] *584
 treatment Nelson's typhoid vaccine 300
 treatment, present day status [O'Leary]
 *1163
 treatment trypanamide [Mayer] *1793
 treatment typhoid H antigen vaccine [Kul-
 char] 822—ab
NEUTROPENIA Malignant See Angina
 agranulocytic
NEVAH Tablets 2085—BI
NEVUS cerebiform resembling cutis verrucis
 gyrata [Hammond] 988—ab
 pigmented or seborrheic warts 1746
 tissues histogenesis [Maggio] 1675—ab
NEW CENTURY Sunlamps 1904
NEW ENGLAND Physical Therapy Society now
 Society of Physical Medicine 1820
NEW YORK See also Index to Organization
 Section
 Academy of Medicine committee report on
 serum treatment of pneumonia [Cecil &
 others] *1323
 City (plan for combating syphilis) [Clarke]
 *1021 (schools use A M A broadcasts)
 1737—E (monthly mean temperatures)
 [Master] 2157—C
 University (graduate work) 1371 (promo-
 tions) 2075
 World's Fair (health exhibits) 439 (Dr J
 Peter medical director) 1643
NEW ZEALAND See Index to Organization
 Section
NEW BORN See Infants New Born
NEWLAND HENRY presidential address 1555
NEWSPAPERS—See also Index to Organiza-
 tion Section
 health column suggestions for writing 1926
 health columnists William Brady 1282—E
 medical supplement (Seattle Times) 140
 (Detroit Free Press) 1643
NICOTINE See Acid Nicotinic
 Poisoning See Tobacco
NIENAN, PICKS DISEASE phosphatide lip-
 oids [Lignac] 998—ab

NIGHT Blindness See Hemeralopia
 Sweats See Sweating
NINHYDRIN Reaction See Cancer
NIPPLE Induced pain early sign of tubercu-
 losis [Mazzetti] 1675—ab
 removal of hair on 2161
NITRITE Sodium See Tobacco amblyopia
NITROGEN fluid spirochetes survival in
 [Jahnel] 1766—ab
 oxides of mine gases 975
dINITROPHENOL toxic drugs [Soper] 294—C
 toxic hepatitis after 731
trINITROTOLUENE, toxic gases from dynamite
 and TNT explosions 1217
NOBEL Prize See Prizes
NODDING spasm 1747
NOGUCHI HIDEYO memorial 217
NOISE campaign against Paris 598
 campaign methods of attack 1625—ab
 problems in England 1500—ab 1511—ab
 reduced by law New York City 1286
 river reduced Chicago 363
 traffic comprehensive attack on 1798—ab
NOMENCLATURE See Terminology
NORTH PACIFIC Surgical Association 2077
NORTHWESTERN University book fair 1820
NOSE See also Colds Sinuses Nasal
 cauterization of genital spots in dysmenor-
 rhea 2160
 disease use of urea in [Lery] 1232—ab
 drops Grove's Emulsified 716—E
 drops neosilv argyria after 977
 injuries automobile [Strath] *940
 mucosa Propadrine Hydrochloride 1279
 obstruction (congenital) of choana, [Ander-
 son] *1788
 obstruction, persistent bucconasal membrane
 in new born [Lemere] *347
 septum perforation in copperplater, [Bar-
 sky] 466—ab
NOSTRUMS See also Quacks under names of
 specific nostrums
 pollicians and England 721
NOVAK S Female Drops OH 449—BI
NOVATROPINE mental disorders from given
 after insulin [Quigley] *1363 [Quinlan]
 2006—C
NOVO Iodine Compound 2085—BI
NOVY Fellowship See Fellowships
NURSE BRAND Blood Purifier 2005—BI
NURSES See also Medicolegal Abstracts at
 end of letter M, Index to Organization Sec-
 tion
 diptheria immunization at Ruchlin Hospital
 [Anderson] 910—ab
 martyr (M da C Lopes) 1466
 tuberculin reactions in 58 (students) 2080
 tuberculosis in aid for New York City 799
NURSING scheme (provident) for London one
 cent a week 442
NUTRITION See also Diet Food Vitamins
 amino acids in 2070—E
 deficient cardiovascular disorders in [Weiss
 & Wilkins] *786
 factors in exophthalmic goiter [Means] 1668
 —ab
 malnutrition use of insulin in [Ellman]
 468—ab
 metabolism (basal) and in children [Naro-
 ney] 741—ab
 needs in pregnancy 598
 of unemployed Utrecht 1650
 problem of League of Nations report 965
 problems in education [McLester] *838
 value of spinach 1907
 wine drinking and South Africa 61
NU VIGOR Tablets 1925—BI
NUVAPHEN 1741—BI
NYALYPTUS, 1741—BI

O

OATMEAL colloid bath with directions for
 giving 67
 decalcifying effect Council report 30
OBEGYNE 2005—BI
OBSIDITY nostrum Germania Herb Tea 375
 —BI
 nostrum Pomry R7 1142—BI (correction)
 1373 [Reed] 1654—C
 nostrum prohibit sale Louisiana 1285
 pituitary skin shrinkage in 381
 pituitary vitamins needed in low calory diet
 610
 pregnancy in adipose primiparas [Mpfier
 Christensen] 1678—ab
 treatment anterior pituitary plus thyroid ex-
 tract in children [Jacobsen & Cramer]
 *101
 treatment diet Dietene 1043
 weight reduction advisable? 893
OBSTETRICIANS American Association of
 new prize 1916
 Central Association of 1645
OBSTETRICS See also Abortion Labor Mid-
 wives
 American Board of examinations 284 1287
 2076
 blood transfusion in [Black] 240—ab (con-
 tinuous drip) [Winterton] 626—ab
 council in Erie county N Y 215
 French Congress 1999
 International Congress of 1373
 National Congress of (proposed) in 1939 217
 population problems interrelated with 1828
 psychotherapy in 1366—E

OCCUPATION See Industrial
OCEANIC Vilev 1925—BI
ODDI S Sphincter See Sphincter of Oddi
OHIO State Medical Association See Index to
 Organization Section
State University Howard scholarship 1822
OIL See also Cod Liver Oil Liver Oil Torch
 Oil
 cutting chronic myelogenous leukemia in
 machinery rollers 1376
 de Vito 1925—BI
 Fuel See Diesel Engine
 in water supply 1838
 intravenous injections cosinophilia after
 [Engelbreit Holm] 472—ab
 iodized See Iodized Oil
 Mineral See Petroleum liquid
 of bergamot protects against u v rays [Ur-
 barck] 833—ab
 of snail as urinary antiseptic [Waffner]
 *999
 of Wintergreen See Methyl Salicylate
 vaporized solutions lung reactions to 1826
OLAC 1127
OLD AGE See also Longevity
 circulatory system role in growing old 1899
 coronary disease in [Glancy & others] *1110
 dextrose tolerance in [Deren] 1157—ab
 geriatrics—care of the aged 2143—E
 Pensions See Index to Organization Section
 pneumonia in respiration and heart action
 normal 155
 scallies [Brodin] 89—ab
 vaginitis in treatment for scallies 731
OLD INDIAN Herb Laxative 2085—BI
OLEOMARGARINE Sunlight Brand 1455
OLIGOPHRENIA See Mental Defectives
OLONO dermalitis from hair dye 286
OLSEN S (Mrs.) Valuable Salve 1741—BI
OMAHA Medical Society See Index to Organi-
 zation Section
ONIONS cooked allergy to 300
ONTARIO Medical Association See Index to
 Organization Section
OPERATING Room See Surgery
OPERATIONS See Surgery
OPHTHALMIA See also Medicolegal Abstracts
 at end of letter M
 neonatorum gonorrheal sepsis in new born
 after [Hoffman & Schneider] *1447
 neonatorum silver nitrate solution for instil-
 lation 1137
OPHTHALMOLOGY American Academy of,
 1051
 French Congress 2151
 postgraduate instruction in, [Parkes] *1262
OPIUM See also Morphine
 pipe lead poisoning from in Chinese [Yang]
 911—ab
 preparations internal use defined 440
OPSONIC Test See Undulant Fever diagnosis
OPTICIANS recognition for testing sight Eng-
 land 286
OPTOMETRY See Medicolegal Abstracts at
 end of letter M
ORAL CAVITY See Teeth
ORANGES dye for toxicity of yellow OB
 [Chimenko] *493
 juice blood changes in tuberculous after
 [Radford] 390—ab
 juice Valora Brand 587
ORBIT infections due to nasal sinusitis [Hu-
 bert] 1671—ab
ORCHIDECTOMY See Testis excision
ORCHITIS See Testis inflammation
OREGON State Medical Society See Index to
 Organization Section
ORGASM See Coitus
ORTHOPEDECS American—Austrian opinion
 Albert Lorenz 361—E
 Brazilian Congress of (second) 720 1466
 Clinical Orthopedic Society silver jubilee
 1051
 French Congress 1137
 German Society Congress 1737
 service for paralysis victims Regina 2077
 services in Children's Bureau Dr Wilson
 consultant 1917
 Surgeons, American Academy of 2077
 Surgery, American Board of (report) 47
 (examination) 216
OSGOOD ROBERT B 1280—F
OSLER S bibliography—730 titles 769—ab
OSSIFICATION See Bone
OSTEITIS deformans circumscribed [Kavich]
 235—ab
 deformans (Paget's disease) calcium toler-
 ance curves in [London] 1803—ab
 fibrosa and parathyroids [Fager] 269—ab
 fibrosa (generalized) metabolism in [Brun-
 ner] 92—ab
 fibrosa (recurrent) [Franch] 2110—ab
OSTEO ARTHRITIS deformans (haschka Beck's)
 iron as causative agent [Hysda] 899—ab
 of both sacro iliac and lumbosacral joints
 and hips 610
 of spine correct diagnosis? 1143
 treatment parathyroid extract 2090
OSTEOCHONDROSIS of femoral epiphysis 1296
OSTEODYSTROPHY See Osteitis fibrosa
OSTEOMYELITIS healing in primordial and
 flat bones [Reicholt] 398—ab
 pyogenic of spine [Mayoral] 87—ab

OSTEOMYELITIS—Continued
vertebral epidural infections in [Brawder]
617—ab
vitamin C excretion in, [Abbasy] 1402—ab
OSTEOPATHY See also Medical Legal Ab
stracts at end of letter M
court upholds hospital in refusing osteopaths
right to practice 1643
temporary injunction to Kansas 438
OSTEOPOROSIS circumscribed of skull and
Paget's disease [Kasabach] 235—ab
OSTEOSATHYROSIS (Lobstein's disease)
familial occurrence, 803 [Carrière] 830
—ab
OSTEOSCLEROSIS fragilis Infantile form
[Gerstel] 1861—ab
OTITIS MEDIA [Crebbin] 2101—ab 2082
complications nonsuppurative [McConnell]
1856—ab
in airplane pilots [Armstrong & Helm] *417
suppuration of pyramidal cells 804
treatment Shrapnell's membrane perforated
with vertigo on syringing 609
OTOLARYNGOLOGY American Academy of
1051
American Board of (examination) 1733
relation to general medicine [Shurly] *2027
OTORHINOLARYNGOLOGY Congress of Latin
Nations on 290
French Congress 287 2000
German Congress 804
OUABAIN See Heart Insufficiency
Ovary cysts effect an upper urinary tract
[Kretschmer & Kanter] *1097
cysts simple [Stabier] 1845—ab
roentgen irradiations (small doses) 'in defec-
ent menstruation [Robecchi] 318—ab
reagent sterilization fractional repeated
doses [Momiellano] 1859—ab
surgery extirpation for amenorrhea 515
[Bailey] 1585—ab
tumors arrhenoblastoma [Foderl] 1493—ab
tumors fibroma with ascites and hydrothorax
[Rhoads & Terrell] *1684
tumors granulosa cell [van Pallas] 397—ab
tumors menstruation and pregnancy after?
1836
OVERGROWTH See Growth
OVULATION testosterone prapionate inhibit
[Zuckerman] 1857—ab
OWL Elixir Iron Quinine and Strychnine 2156
—BI
OWEN'S VIII Veg 1741—BI
OXFORD University medical school 1825
OXY Indian Catch Syrup 606—BI
DOXYACETONE See *di*DOXYacetone
OXYGEN See also Pneumoperitoneum
apparatus for carrying during flights
516
injection See Pneumonia
tent Collins Oxydo Open Tap 793
tent III effects of being daily in 2159
Treatment See Brain encephalography
Heart disease Pneumonia Respiratory
Tract disease
OXYQUINOLINE neutral sulfate of to can-
cer blood for Wassermann test 58
OXYURIASIS appendicitis from [Battaglia]
832—ab
incidence in boys [Bazilevich] 1315—ab
treatment tetrachlorethylene single doses
[Wright & others] *570

P
PACHYDERMA See Skin
PACHYPERIOSTOSIS See Bones
PACKAGE Library See Library
PAGET JAMES Jackson's letter to [Helndel]
1295—C
PAGET'S DISEASE of Bones See Osteitis de-
formans
PAIN See also Breast Coccyx Epigastrium
Legs Menstruation Uterus cancer etc
localizing instrument for (dermagraph)
[Stern] *346 (pinnheel) [Wartenberg]
1294—C
Relief See also Anesthesia Cancer
relief alcohol injections of postlar sensory
roots 1838
relief Larodon Roche (Council report) 209
relief pantopon vs morphine sulfate [Hay-
man & Fax] *1813
relief (postoperative) in cured morphine ad-
dict 1839
relief subarachnoid alcohol injection [Pey-
ton] 1073—ab
PALATE myxo endothelioma within velum pen-
dulum [Simoon] 242—ab
PALMERS Lotion Lotion Soap 1060—BI
PALMIST VINCENTO VI appointment 62
PAN-AMERICAN Medical Association seventh
congress 216 1462 2077
PANCREAS Fistula See Fistula
function iodized oil test 369
infarct 1464
Inflammation See Pancreatitis
necrosis (acute) etiology [Solovov] C32—ab
secretion hyperosulinism or hypoglycemia?
378
secretion (juice) etiologic factor in gall
bladder disease [Wolfer] 393—ab
structure effects of thymus irradiation on
[Bentivoglio] 995—ab

PANCREATITIS [Abell] *1243 [Friedenwald]
2102—ab
acute 372 (Cullen's sign) [Falls] 617—ab
PANIC publicity and police 957—E
PANNICULITIS Weber Christian disease
[Bailey] *1419
PANTOPON analgesic action [Hayman & Fax]
*1813
Rache Council report 1813
PAPAVIRINE Hydrochloride See Foot gangrene
PAPILLOMA cutaneous [Wise] 1486—ab
PARA AVINO BENZENE SULFONAMIDE
See Sulfanilamide
PARABIOSIS vascular sex hormones and eau-
cer [Murray] 903—ab
PARAFFIN See Medical Legal Abstracts at end
of letter M
Embedding See Sputum
PARALYSIS See also Hemiplegia Medica
legal Abstracts at end of letter M
after giving diphtheria antitoxin 154
agitation drugs for stramantium scopalamine
and atropine 976
agitation heredity 1283—E
agitation Maet's cobra venom for 452
barbitol (side actions) 508—E
diaphragmatic after tuberculous changes
[Midler] 320—ab
Diphtheritic See Diphtheria
facial peripheral [Fannetion] 1587—ab
facial relapsing alternating peripheral [Vi-
ole] 742—ab
Infantile See Poliomyelitis
infection in chickens relation to poliomye-
litis 144
Jamaica Ginger See Neuritis peripheral
of Ocular Muscles See Eyes paralysis
peripheral after typhoid vaccine injection
[Robinson] 168—ab
phrenic in subdiaphragmatic infection
[Cooper] 1586—ab
radial after burns [Bahls] 630—ab
Respiratory See Respiration
shuttle font 1930
spastic [Barker & Ford] *785
spastic (Little's disease) ankle clonus in in-
fant at 3 months 1835
wood tick in children [Barnett] *846
PARALYSIS GENERAL See Dementia Para-
lytica
PARATHYROID Extract See Dystrophy mus-
cular Osteo Arthritis treatment
hyperfunction relation to renal calculi [Ran-
dall & others] *1701
stellitis fibrosa and [Eger] 2025—ab
renal hyperparathyroidism with Cushing's
syndrome [Pans] 1671—ab
PARATYPHOID B epidemic in Liverpool [Fra-
zer] 1491—ab
bacteria in skin lesions [Fasting] 1581—ab
bacteria (killed) intravenously in undulant
fever [Ervin & Hunt] *1966
carrier survey in institution [O Callaghan]
1081—ab
PARESTHESIA See also Acroparesthesia,
Skin hyperesthesia
of face 155
PARIS See also University of Paris
Exposition (International Medical Days dur-
ing) 59 (exhibits meetings) 286 (madel
village) 1289
Medical School See Faculté de Médecine
PARISOT JACQUES 145
PARKINSONISM See Encephalitis Epidemic
PAROTITIS epidemic brain disorder after
[Johansen] 244—ab
PARROTS See Psittacosis
PASSIVE Vacuum Exercise See Blood Ves-
sels
PASTEURIZATION See Milk
PATCH Test See Tuberculin
PATELLA displacement joint changes from
[Bennett] 537—ab
hypoplastic in hereditary syndrome [Mon-
tant] 541—ab
PATENT MEDICINES See Nostrums
PATENTS See also Medical Legal Abstracts at
end of letter M
medical [Fishbein] *1539 [Scarlet Fever
Committee] 1833—C
PATERNITY See also Medical Legal Abstracts
at end of letter M
blood group tests for nonpaternity 1929
PATHOLOGISTS impostor impersonates 1502
PATHOLOGY See also Specimens Index to
Organization Section
German Society of 2152
PATIENTS See also Hospitals and under
specific diseases as Diabetes Mellitus Tu-
berculosis Index to Organization Section
History See Case records
patient himself 214—E
Record Book See Venereal Disease
PATTERSON Institute for Cancer Research
Chicago 1993
PAUL CHESTRE E suspended sentence 214
PAULIAN DIMITRIE elected to Rumanian
Academy of Sciences 62
PEACE International Campaign 1918
PEACH dried intestinal obstruction for [An-
drews & Walker] *431 [Nettelroth] 1295
—C
PECTIN as antiseptic 1283—E
PEDIATRICS American Board of examinations
284

PEDIATRICS—Continued
grip as seen in practice of [Aldrich] 1760
—ab
International Congress meet in 1940 in U S
39
Marriott Memorial Fund 1132
PEDICULOSIS delousing with sulfur anhy-
dride vapors [Lebailly] 1942—ab
PELLAGRA cardiovascular symptoms in [Wells
& Wilkins] *791
porphyria in [Beckh] 1406—ab
retrobulbar neuritis in [Fine] 904—ab
survey Arkansas 1131
treatment blismuth and nearsphenamine nat-
indented 455
treatment nicotinic acid amide 1203—E
[Smith & others] *2054 [Smith] 2086—C
[Funk] 2086—C
treatment stomach preparations [Petri] 1322
ab
PELVIS contracted vs antepartum caro
[Tams & Clnhr] *197
effect of fall on 71
heating Lepel Short Wave Diathermy Ma-
chine 1364
abstetric pelvimetry 1745
radiography by lateral exposure [Reich-
emiller] 1085—ab
tumors effect of injury on 2161
PEMPHIGUS bullous impetigo or toxic eryth-
ema? 1383
treatment Germanin (Bayer 205) cartilag-
necrosis of adrenal after [Wells & others]
*490
PEMS See also Forekline Priapism
Crisis See Tabes Dorsalis
leukodermatosis surgery for [Hansen] 322—ab
plastic induration 300 (after gangrene)
2089
tumors (malignant) in children [Campbell]
*1609
vesicles on 381
PENITENTIARIES See Prisons
PENOR S (Dr.) Regulator Pills 1560—BI
PENNSYLVANIA See Index to Organization
Section
PENSIONS See Index to Organization Sec-
tion
PENTANONE industrial hazard [McConnell]
*765
PENTOBARBITAL SODIUM Abbott (Neubur-
ton) commercial monopoly of name 504
Lilly dosage forms accepted 1365
narcotic habit from taking 527
PEPSIN activity studied by double histamine
test [Rivers] 903—ab
PEPTIC ULCER See also Ulcers under Med-
ical Legal Abstracts at end of letter M
absent in pernicious anemia [Kahn] 1755—ab
asymptomatic scurvy and wound healing [In-
galls] 1489—ab
complications treatment [Kruze] *868
etiologic tissue defense in [Carlsan] 312—ab
etiologic trauma 1220
food allergy with leukopenic index [Lang]
*23
gastraduodenal and amino acid metabolism
[Herfart] 1764—ab
gastraduodenal in Japan [Tamada] 1760—ab
hemorrhage campitlan demanding treat-
ment [Abell] *1242
hemorrhage from duodenal x ray diagnosis
[Hamptan] 2096—ab
hemorrhage from gastric diet unrestricted
[Neulengrcht] 2025—ab
hemorrhage in Meckel's diverticulum
[Thompson] *938
nostrum Udgan Tablets 605—BI 1923—BI
pepsin activity in double histamine test of
[Rivers] 903—ab
perforated acute [Chang] 2171—ab
perforation campitlan demanding treat-
ment [Abell] *1242
perforation of duodenal causes pyloricobitis
[Roberts & Hadler] *1629
perforation of gastroduodenal [Sosnyakov]
1678—ab
pyloric (true) [Garlin] 1237—ab
surgical treatment partial gastrectomy for
gastric or duodenal [Marshall & Klefer]
*1341
treatment diet decaffeinated coffee and de-
nicotinized tobacco in [Bernay] 1912—ab
treatment histidine [Upham & Barowsky]
*422 [Königsberg] 396—ab [Fürth] 1677
—ab
treatment histidine blood clotting time after
[Bloch & others] *204
treatment nasal tube gastric suction alkalo-
sis and death after [Taylor] *267
treatment roentgen of spinal cord centers 60
treatment sodium bromide and atropine sul-
fate [Landau] 1858—ab
treatment tryptophan [Fürth] 1677—ab
PEPTONE bactopectone parenterally effect
[Niles] 1074—ab
PERBORATE See Sodium perborate
PERCHLOROTHYLENE See *tetra*Chloroethylene
PERIARTRITIS nodosa eosinophilia in 403
(reply) [Sandler] 977
PERICARDITIS See also Pick a Syndrome
[Shipley] *1017
adhesive causing cardiac compression x ray
diagnosis [Freeman] 821—ab
adhesive (chronic fibrous) [Lasseo] 472—ab

- PERICARDITIS**—Continued
adhesive section of left phrenic nerve for [Martin] 1491—ab
suppurative drainage by removing costal cartilage [Cottam] 1926—C
- PERINEUM** surgery vesical dysfunction after [Hill & others] *1184
- PERITONEUM** See also Pneumoperitoneum
effect of mineral oil poured into cavity during operation 731
Injection into See Blood Transfusion
protection against infection Steinberg method 1457—E
- PERITONITIS** acute syndrome as hypersensitivity reaction [Velchior] 1764—ab
biliary 1053
complications complete heart block [Swift & Smith] *2038
lymphatic absorption in vs anesthetics [Vengle] 186—ab
perforation of gastro intestinal tract [Bergh] 1078—ab
pneumococcus in childhood [Mundorff] 1859—ab
pneumococcus treatment [Koch] 472—ab
- PERMANENT WAVE** See Hair
- PEROXIDE** of Hydrogen See Hydrogen
- PERSONALITY** of stutter-type child, [Grcene] *187
shut in type 1687—ab
- PERSPIRATION** See Sweating
- PETRUSSIS** See Whooping Cough
- PESARIES** gold stem trauma and infection from [Cholsser & Notes] *1628
- PETROLATUM** block (depressed) to secure blood for analysis [Abramson] 1402—ab
Liquid See also Rectum hemorrhage
liquid mineral oil in foods effect on vitamin A utilization Council report 1814
liquid poured into peritoneal cavity during operation effect 731
Pomay R 7 1142—BI (correction) 1373
- PETROLEUM** crude for abrasions 1300
distillates Shells Kleenzit 1658
hydrocarbons industrial hazard [McConnell] *764
- PEWTER** lead poisoning in Chinese [Yung] 911—ab
- PEYRONIES** Disease See Penis plastic in duration
- PEFFIFFER** S Hamburg Tea 1832—BI
Sore Throat Remedy 2005—BI
- PHARMACEUTICAL** Conference British 721
arms dangerous promotion by detail men [Richter] 1926—C
- PHARMACISTS** See also Medicolegal Abstracts
at end of letter M
national statute Germany, 370
number Japan 2184
- PHARMACOPEIA** Italian synthetic camphor in 2152
U S and the physician (use of expectorants) [Brown] *268 (use of calcium choice of calcium salt) [Aub] *1276 (use and abuse of ergot and posterior pituitary) [Davis] *1631
U S XI Supplement released 595
- PHARMACY** A M A Council on See American Medical Association
chain store campaign against Australia 1056
- PHARYNX** See also Nasopharynx
Abscess See Abscess retropharyngeal
buccopharyngeal sepsis in typhoid [Orgaz] 396—ab
tuberculous ulcers [Ormerod] 1856—ab
- PHENOBARBITAL** addiction danger of inducing 2161
contraindicated in parkinsonism [Ziskind & Ziskind] *20
Treatment See Epilepsy
- PHENO COSAN** 1560—BI
- PHENOL** compounds industrial hazard [McConnell] *764
- PHENOLPHTHALEIN** toxicity [Soper] 294—C
- PHENYLETHANOLAMINE** chemical formula *1176
- PHLEBITIS** See also Phlephlebitis Thrombophlebitis
treatment roentgen [Henschen] 175—ab
- PHLEGMON** See Intestines inflammation
- PHOSGENE** consumption of food contaminated with 1291
- PHOSPHATASE** in Blood See Blood
Test See Milk pasteurization
- PHOSPHATES** role in calcium metabolism [Aub] *1278
- PHOSPHATIDE** Lipoidosis See Lipoidosis
- PROSEPHO** 1653—BI
- PHOSPHORUS** and intestinal flora 1638—E
ratio of diet effect on degree of rickets produced 30
- PHOTO ELECTRIC** Colorimeter See Blood catalase
- PHOTOGRAPHY** See Stomach Telecord
- PHOTOSENSITIVITY** See Light sensitivity
- PHRENECTOMY** See Nerve phrenic Tuberculosis Pulmonary
- PHYLLIS** Brand Evaporated Milk, 359
- PHYSICAL DEFECTS** See Crippled, Handicapped
- PHYSICAL EDUCATION** See also Athletics
Exercise
American Association for 362—E
campaign launched by prime minister England 216 1374 1463 2078
fitness for military service, Germany 1737
in New Zealand 221
in schools Belgium 372 1922
in schools Japan 289
International Congress of Medicine ns applied to (first) 1137
medical control Congress of Sport Physicians discuss 1292
on a national scale Japan 1921
- PHYSICAL EXAMINATION** of all Osaka citizens Japan 1921
of applicants for marriage Michigan 1049
of applicants in transportation services Paris 1554
of first year medical students Paris 1375
of food handlers ordinance requires Maine, 53
of school children [Rogers] *842
reconstruction of substandard recruits in British army 591—E
- PHYSICAL EXERCISE** See Exercise
- PHYSICAL MEDICINE** Academy of 1287
New England Society of 1820
- PHYSICAL THERAPY** See also Diathermy
Massage Roentgen Rays Ultraviolet Rays etc
American Congress of 883
A M A Council on See American Medical Association
New England Society changes name 1820
technicians, schools approved for by A M A *708
- PHYSICAL TRAINING** See Physical Education
- PHYSICIANS** See also Economics Medical Education Medical Ethics Medical License Medical Service Medicine practice surgeons etc Index to Organization Section
American College of Chest Physicians new name 514
avocations (hobby exhibit at New Jersey state meeting) 365 (medical minstrels New York) 439 (Dr Cronin as novelist) 956—E
Committee of (self appointed) proposals on state medicine 1280—E 1728—E 1816—E
Deaths See list of deaths at end of letter D
England's coroners to be 515
Federal Registration See Medicine state
Foreign See Graduates foreign Licensure
Gesellschaft der Aerzte Vienna centenary 446
Heroes See Heroes
Impostor impersonates 1645
in politics (Dr A R Miller mayor for 25 years) 364
Income (method of establishing Rumania) 61 (estimate of life earnings) 284
Indigent Physician's Social Aid Germany 518
Insurance (health) societies consultants Germany 444
Insurance (life) 216
Jewish See Jews
library habit 1702—nb
Martyrs See Martyrs
monuments to Dr S C Thomson 438
of the future Lord Horder on 1824
panel graduate courses for England 966
positions open for (serologist and medical director Arkansas) 363 (district health officers Illinois) 592 (school medical supervisor New York) 718 (C C C) 1917
practicing education 597
practicing family practitioner success dwells in the silences 837—ab
Rural See also Physicians supply
rural Bingham a gift for medical center Massachusetts 717
skeptical of authority 1631—ab
sport first Congress of 1292
state (Ibe) and Italy 1213
supply Germany 1826
supply, rural Rumanian Medical Association 725
- U S Pharmacopeia** and (expectorants) [Brown] *268 (calcium and choice of calcium salt) [Aub] *1276 (ergot and posterior pituitary) [Davis] *1631
Veteran See also under names of individuals as Abel Bleuler etc
veteran honored Massachusetts 214
Vienna's World War memorial to 600
women Jacobi fellowship for 594 1823
women statistics *669
- PHYSIOLOGY** International Congress (sixteenth) 1733
Moscow Institute of monthly bulletin on work 60
- PHYSIQUE** See Constitution
- PICK'S DISEASE** See Brain atrophy
- PICK'S SYNDROME** treatment cardiolytic (Brauer's operation) for [Turner & Moore] *25
- PICK NIEMAN'S DISEASE** See Niemann Pick's Disease
- PICR1** Stringent 1560—BI
- PICROTOXIN** See also Amytal poisoning
antagonistic to barbiturate [Krantz] 2010—ab
- PIGMENTATION** See Epithelioma
- PILLOWS** Sleepwell Golden Floss, 1723
- PILOCARPINE** paralyzed pupil respond to 1839
- PINEAL BODY**, relation to adrenal cortex [von Kupf] 2025—ab
- PINEAPPLE** brands accepted 133, 277 359, 587 1043, 1127 1815
- PINERVA** Pine Needle Bath Salts, etc 449—BI 1060—BI
- PINKHAM'S** Tablets 1832—BI
- PINWORMS** Infestation See Oxyuriasis
- PISOS** in new taiment 449—BI
- PITRESSIN** (beta hypophamine) in laparotomies [Seed] 84—ab
to control and relieve distention, [Frazier] 389—ab
- PITUITARY** anterior effect of hormones on, 1657
anterior extract effect on carbohydrate metabolism [Lassen] 2110—ab
anterior hormone action on vasomotor center [Seligsohn] 1768—ab
Anterior Hormone (gonadotropic) See Gonadotropic Principles
anterior hormones, standardization [Colip] 462—ab
anterior therapy clinical results in children [Jacobsen & Cramer] *101
blindness [Pesme] 1942—ab
cachexia with idiopathic steatorrhea, [de Langen] 398—ab
changes after thyroidectomy, [Altschul] 1938—ab
Cushing syndrome with renal hyperparathyroidism [Pons] 1671—nb
disorders skin shrinkage in obesity, 381
hematopoietic hormone in [Flaks] 1407—ab
hormones discussed at International Medical Days 1210
irradiation for menopause disorders [Zolinger] 1157—ab
posterior antidiuretic hormone of 1545—E
posterior extracts cause of uterus rupture [Junghans] 92—ab
posterior solution for herpes of eye 976
posterior solution for urticaria gigantea perstans [Rosenberg Schauss] 541—ab
posterior solution prolong action by giving metal salts [Dodd] 1318—ab
posterior use and abuse [Davis] *1631
- PLACENTA** Blood Coagulant Extract See Hemophilia
calcification from using viosterol in pregnancy [Brehm] 1490—ab
expulsion procedure in third stage [Montgomery] 744—ab
Extract See Measles
hemorrhage (apoplexy) 1999
infection in induced labor [Penfold] 1236—ab
prævia roentgen diagnosis [Robecchi] 318—ab
spirochetes in 1046—E
- PLAGER** MAX blood pressure business court upholds 512
- PLAGUE** human (Nevada) 214 (fatal case, California) 1205
infected fleas how wide spread? Danger of handling ground squirrels or pits? 1064
infection in ground squirrels (Oregon) 54 (Nevada) 1206 (Montana) 1285 (Utah) 1286 (California) 1819 2073
infection retained by insects at least 10 months 1131
- PLANT** See Pollen Thus Seeds Weeds
Gas Plant See Dictamnus albus
- PLANTAIN** hay fever (correction English and Rugei's plantain) [Blumstein & Tuft] 606—C
- PLASMA** See under Blood
- PLASMOCHIN** Treatment See Malaria
- PLASMODIA** See Malaria
- PLASTER** Adhesive See Adhesive
cast metal channels facilitate removal [Prosper] *1448
shells (molded) of cellulose acetate mixture for polymyositis [Deanett & others] *1220
- PLASTIC** Surgery See Surgery
- PLATELETS** See Blood
- PLATING** See Chromium Copper Metal
- PLEURA** a-cites [Goodman] *1980
changes after irradiation extrathoracic tumors [Hsieh] 822—ab
effusions (massive) in artificial pneumothorax [Rosenblatt] 1843—ab
effusions treatment 285 721
effusions fold salts into in pulmonary tuberculosis 442
shock air embolism vs pleural reflex as cause of [Capps] *8.2
- PLEURIS** lamellar in infants marginal x ray shadows in [Migliori] 90—ab
- PLEURODYIA** See Myositis epidemic
- PLEXTUS** See Cellul Plexus
- PLUMBING** brass 299
- PLUMS** Sexton Brand 31

PNEUMATIC Tools See Air compressed
PNEUMOCOCCUS Antipneumococcal Serum,
Type I (Squibb) 875
Antipneumococcal Serum Types V and VII
Lederle Council report 875
antiserum distribution (New York) 1915
(Mass.) [Chadwick] 1926—C
eadoecarditis 1743
infection, quinine in [Kemkes] 996—ab
infection sulfanilamide and serum therapy
[Branham] 312—ab
infection sulfanilamide effect on [Bliss &
Lond] *1524
infection with type I effect of Edwennil on
[Stainsby & Shultz] *273 280—E
Menigitis See Meningitis
Peritonitis See Peritonitis
Pneumonia See Pneumonia
type III mastoiditis Intracranial complica-
tions [Goldman & Herschberger] *1254
type III septicaemia prontosil soluble for
[Millett] *2138
type V pneumonia [Rosenbluth] 1850—ab
types (various) occurrence [Goldstein] 2057
—ab [Bullowa] 2062—ab
typical facilities 1910—E
vaccines skin reaction to [Well] 1232—ab
PNEUMOCOCCOSIS See also Medical Abstracts
abstracts at end of letter M
asbestosis silicosis etc [Lynch] *1974
bentonite dust 1656
in Belgian coal miners 602
silicosis pathology of lungs and other organs
in [Matz] 1233—ab
silicosis symposium N Y 594
tuberculosis in silicosis incidence [Pope] 79
—ab
PNEUMOGRAPHY See Brain tumors
PNEUMOLYSIS See Tuberculosis Pulmonary
artificial pneumothorax in
PNEUMONIA See also Bronebopneumonia
Medical Abstracts at end of letter M
Advisory Committee on U S Public Health
Service appointments 1997
blood serum in vitamin A content [Lind
qvist] 1861—ab
cedar poisoning of lungs predisposes to 1744
clinic showing case of type I pneumonia
[Kohn] 2061—ab
complications complete heart block [Swift
& Smith] *2038
control program (New York) 718 882
(Pennsylvania) 882
croupous serum treatment [Nissen] 1322—ab
diagnosis 1062 (early clinical) [McCann]
2056—ab (bacteriologic) [Goldstein] 2057
—ab
Friedlander bacillus infections [Baehr] 535
—ab
in old age respiration and heart action nor-
mal 155
Institute New York 1049 1550 (abstract
of proceedings) *2056
laboratory service extended Conn 1819
lipoid and oil in lungs 1367—E
mortality 1910—E
reports prize awarded New York 1643
Serum See Pneumococcus antiserum Pneu-
monia treatment
sputum pneumococcus types in [Nissen] 1240
—ab
survey (5 year) Massachusetts 139
treatment [Bullowa] 2061—ab
treatment Antipneumococcal Serum Types V
and VII—Lederle Council report 875
treatment expectorants [Brown] *268
treatment liver extract parenterally in [Wii-
son] 389—ab
treatment oxygen (inhalation) 524 [Bul-
lowa] 2058—ab (injection) 1383
treatment quinine [Kemkes] 996—ab
treatment serum 1062 [Nissen] 1322—ab
(New York Academy report) [Cecil &
others] *1323 [Cole] 2059—ab [Bul-
lowa] 2062—ab
treatment sulfanilamide [Heintzelman] 389
—ab [Millett] 1940—ab
treatment transfusions in primary form
[Arenia] 741—ab
tularemic (bilateral) roentgen study of non-
fatal case [Blackford & Archer] *264
tularemic from handling tick infested sheep
[Winter & others] *258
type V pneumococcus [Rosenbluth] 1850—ab
unresolved 1656
unresolved (positive Wassermann test in)
1380 (reply) [Robertson] 1339
PNEUMOCOCCOSIS See Pneumococcosis
PNEUMONIA 2065—B1
PNEUMOPERITONEUM 895
treatment after puerperium in pulmonary tu-
berculosis [De Michels] 99—ab
treatment of pulmonary tuberculosis [Trim-
ble] 886—ab
PNEUMOTHORAX effect on normal lung in
skin tuberculosis 1920
from experimental overinflation of lung 959
—E [Vacklin] 1470—C
infectable [Teachman] 1410—ab
spontaneous benign 442 134C
spontaneous in childhood [Wissler] 2023
—ab
spontaneous unusual forms [Caster] 994—ab

PNEUMOTHORAX ARTIFICIAL See also Tu-
berculosis Pulmonary artificial pneumo-
thorax in
accidents resulting from [Pols] 395—ab
air embolism to epinal cord after [Wikler &
others] *430
blood picture and sedimentation reaction after
[Mourier] 1768—ab
extrapleural [Hautefeuille] 541—ab
PODOPHYLLUM sensitivity to? 155
POISONING See also Carbon Monoxide In-
dustrial Lead Methyl Chloride Potas-
sium permanganate etc Medical Abstracts
Abstracts at end of letter M
isolating organic poisons from viscera rapid
method [Stewart] 2104—ab
POLIOENCEPHALOMYELITIS due to bululism
[Schwartz] 620—ab
POLIOYELITIS acute anterior campaign
against Germany 601
acute anterior early diagnosis [De Mattin]
013—ab
acute anterior in chimpanzees 2082
acute anterior injury vs localization of pa-
ralysis [Parker] 1404—ab
acute relation of paralytic form of infection
in chickens to 144
cerebellar nodule form [Glanzmann] 1859—ab
chronic [Stegmann] 1312—ab
diagnosis erroneous 2152
encephalitis (epidemic) in those who have
had [Klimke] 1494—ab
epidemics (1931 1936) [Stender] 1589—ab
epidemics (Oklahoma) 365 (Arkansas) 437
(Mississippi) 512 (in boy scout camp) 592
(in U S) 595 800 883 (Australia) 966
(Ontario) 801 883, 1552 (Victoria) 1290
immunity (active and passive) prevention
and portal of entry (nose vs gastro in-
testinal tract) [Toomey] *402
immunization ricinoleated vaccine [Kolmer]
237—ab
immunization use of therapeutic serums after
onset of paralysis 1063
National Foundation for Infantile Paralysis
1997
panic publicity and 957—E
orthopedic service for paralysis victims 2077
President's birthday celebration funds for
1051 1997
prevention nasal sprays (zinc sulfate or picric
acid alum) 958—E [Harmon] 1061—C
Ludium] 1142—C [Lennette] 1381—C,
(Canadian experience) 2072—E
transmission to animals [Kolmer] 1156—ab
treatment after care 729
treatment end results of Drinker respirator
1130—E
treatment laryngoscopy intubation and oxy-
gen insufflation to tide over fatal period
before respirator [Flagg] 1216—C [Brahdy]
2006—C
treatment molded plaster shells [Bennett &
others] *1120
treatment short waves 1139
treatment vitamin C [Jungeblut] 1758—ab
vaccine [Kolmer] 1062
vitamins in relation to [Toomey] 77—ab
POLITICS Physicians in See Physicians
votes and free hospital service France 1210
POLLEN Allergen Solutions Squibb 1454
antigens Improved alcoholic fractionation
(or purification) 280—E
Antigens National 1543
Extracts See also Hay Fever treatment
Extracts Muirford 209
patients sensitive to but not to seeds of same
plant 878—E
POLYARTHRITIS See Arthritis
POLYCYTHEMIA fundus lesions in [Cohen]
79—ab
vera unusual forms [Seggall] 1409—ab
POLYNEURITIS See Neuritis
POLYPEPTIDES in Blood See Blood
in Spinal Fluid See Cerebrospinal Fluid
PONAT R 7 1142—B1 (correction) 1373
(Constitutional effect of salicylic acid in
ointment) [Reed] 1654—C
POMPHOLIX between fingers 227
PONTOCAINE Hydrochloride N N R 433
POPULATION See also Vital Statistics
decrease France symposium on 855
menace of British population 1638—E
problems of interrelated to obscurities 1828
supply and demand 1726—E
PORPHYRIA in Feeces See Feeces
in Urine See Urine
PORTAL VEIN See also Pylephlebitis
obstruction with ascites enteroclysis in [Ful-
ler] 1316—ab
quickest and best treatment for ascites in
person past 60 1566
POSITION See Posture
POSTOPERATIVE Complications etc See Sur-
gery
POSTURE defects in arthritis [Harlung] 2099
—ab
effect on blood pressure [Wald] 1485—ab
effect on cardiac output [Sweeney] 1347—ab
effect on electrocardiogram [Erheleins] 1678
—ab
Fetal See Labor presentation
lateral position effect on rest of lung in nor-
mal [Vacarezza] 1765—ab

POSTURE—Continued
physical reconstruction of substandard re-
cruits in British army 591—E 2150
prone value in sea and automobile sickness
[Tobler] 2172—ab
POTASSIUM Arsenito See Leukemia mycoge-
nos
chlorate in dentifrices 455
permanganate poisoning fatal [Johnston] 1761
—ab
POTENCY See Fertility
POTT'S DISEASE See Medical Abstracts
at end of letter M
POULTON EDWARD surveyed controversy on
evolution 1135
POWDER See Gunpowder Talcum Powder
POWERS Asthma Relief 1925—B1
PRACTICE of Medicine See Medicine prac-
tice Physicians practicing
PRACTITIONERS See Physicians
PRECIPITIN serum for testing for human blood
896
PRECISION PILLS Rheumatic Relief Tablets
1925—B1
PREGNANCY See also Abortion Eclampsia
Embryo Fetus Labor Maternal Puer-
peral Infection Puerperium
after irradiation and ovarian tumor 1836
after menopause cases 528
blood changes in 886
complications arthritis subsides 2161
complications chronic purpura haemorrhagica
1146
complications diabetes mellitus (slight glyco-
suria) 1745
complications gallbladder perforation [Stonck]
*1903
complications gonorrhea sulfanilamide for
527
complications heart disease [Consoli] 242
—ab
complications hypertension prognostic value
of cold test [Briggs] 393—ab
complications hyperthyroidism primary thy-
roid hyperplasia in one stillborn twin
[Warren & Sphner] *575
complications myocardial infarction [White
& others] *863
complications polyneuritis 527
complications pulmonary tuberculosis [In-
fantozzi] 470—ab
complications retinitis [Duggan] 2104—ab
complications Taenia saginata infestation
anthelmintics during 1658
diagnosis chemical [Patterson] 1673—ab
diagnosis chemical Friedrich's modification
of Visscher Bowman's test 812
diagnosis intradermal test with antitubercu-
lin [Schneider & Cohen] *115
diagnosis syncytial reaction [Cholsser &
Notes] *1628
extra uterine ruptured [Abell] *1243
bylgene antepartum care advantages elicit
comings [Tams & Clahe] *193
in adipose primiparas [Mjller Christensen]
1678—ab
last longer than formerly? [Wahl] 177—ab
liver function and dihydroxyacetone [Dicke]
1944—ab
Multiple See Quintuplets Twins
nutritional needs in 598
syphilis in 298 451 (replies) [Davies] 977
[Cormia] 1065
syphilis in spirochetes in placenta 1046—E
syphilis in Wassermann reaction in placental
blood [MacKay] 1594—ab
syphilis treatment in [Cole] *580 1145
teeth caries in effect of calcium and vitamin
D (reply) [Gordon] 733
toxemia [Tams & Clahe] *106 (late)
[Young] 314—ab 588—E
tumors (malignant) and [Smith] 1847—ab
uterine motor functions in [Cordaro] 914—ab
urine hormone treatment of syphilis 1931
vitosterol used in danger of placenta calcifica-
tion [Bruchm] 1490—ab
vitamin C deficit during [Caetgeans] 470—ab
vomiting of 1474 [Ohlrmacher] 1941—ab
weight changes during and after [Wellroy]
86—ab
weight (loss of) in 1658
work (factory) in relation to 722
PRELARINGEAL GLAND pathology [Collet]
1032—ab
PREMEDICAL Education See Education,
Medical
PRESCRIPTION See also Index to Organiza-
tion Section
No 69 1832—B1
PRESS See Newspapers
PREVENTIVE MEDICINE Industrial [Bristol]
*245 [Selby] *1167
fight against disease through the ages 2081
PRAPISIN epidural injections for technic
1145
PRIDE of the Farm Tomato Juice 587
PRISONS medical services Institute of Medi-
cine of Chicago survey 1418
syphilis in penitentiaries 1062
PRIVILEGED COMMUNICATIONS See also
Medical Abstracts at end of letter M
Brussels physicians protest a judicial
confiscation of patients records 603

- PRIVILEGED COMMUNICATIONS**—Continued professional secrecy and social insurance France 517
- PRIZES** Alvarenga for 1938 1732
American Academy of Ophthalmology and Otolaryngology award 1917
American Association of Obstetricians Gynecologists and Abdominal Surgeons (new) 1916
Bernard (Leon) 1375
Bigelow Medol 142
Boullard 291
British Medical Association gold medol 1555
Burdick (Ward) 56
Capps (Joseph A.) 438
Cossetberry 719
Central Association of Obstetricians and Gynecologists 1641
Chandler Medol 1206
Cleveland (Clement) Medol 1371 1644
Comstock 1823
Duchenne Academy 441
French Society of Dermatology and Syphilology 965
Harben gold medol 217
Hordmon Loving Cup 52
Hart (Violet) Medol 1642
International Union Against Tuberculosis 217
Keyes gold medol 284
Lafayette Louisiana circle cup to Dr L O Clark 53
Long (Crawford W.) 52
Medical Association of South Africa 1377
New York State Department of Health 1643
Nichols (William H.) Medol 1894
Nobel to Albert von Szent Gyorgyi 1733
1912—E, 2153 (German substitute for) 2002
Prince Albert of Monaco awarded 59
Smith (Theobald) first award 366
Snow (William F.) first presentation 2075
South Africa Medical Association gold medol 61
Stacey (James E.) 364
Trudeau Medol 55
- PROCAINE HYDROCHLORIDE** See also Anesthesia
solution ampoules N N R, 1365 1543
Treatment See Chorea
- PROCTITIS** See Rectum Inflammation
- PROFESSIONAL SECRECY** See Privileged Communications
- PROFESSORS** exempt from compulsory retirement France 58
- PROGESTERONE** prolactin mechanism [Young] 314—ab
- PROGYNON** See Estrogens
- PROKOSCH FREDERICK THE SEVEN WHO FLEW** 957—E
- PROLACTIN** treatment of chronic cystic mastitis [Lewis & Geschickter] *1894
- PROLAN** See Gonadotropic Principles
- PRONTOSIL ALBUM** See Sulfanilamide
flavum agranulocytosis from [Borst] 829
—ab
soluble intrathecal use in pneumococcus meningitis and septicemia [Millett] *2138
substances chemical formulas 1725
treatment of quartan malaria [Von der Wielen] 398—ab
- PRONTYLIN** See Sulfanilamide
- PROPADRINE** chemical formula *2065
Hydrochloride Sharp & Dohme 1279
- PROPRIETARIES** question of commercial monopoly of name 504
U S Food and Drug Administration to regulate naming compounds 715—E
- PROPYLENE GLYCOL** feeding experiments [Holck] *1517
Industrial hazard 956—E
- PROSTATE** condition relation to impotence 891
hypertrophy androgen treatment [Champy] 912—ab
hypertrophy estrogen treatment [Wugmelter] 628—ab [Champy] 912—ab
hypertrophy preoperative study [Shivers] 1580—ab
hypertrophy roentgen therapy [Schnelder] 997—ab
Inflammation See Prostatitis
resection (transurethral) residual urine after 1930
tumors (malignant) in children [Campbell] *1610
- PROSTATITIS** chronic treatment 380 2087
colon bacillus 975
gonorrhea (possible) and 1065
leg pains caused by 2087
- PROSTIGMIN** See Myasthenia Gravis
- PROTAMINE** in immunization 300
Insulin Zinc Insulin See Diabetes Mellitus
- PROTEIN** See also Amino Acids Meat etc
change to carbohydrate 2072—E
deficiency edema [Boyer] 1854—ab
deficiency effects on heart [Wells & Wilkins] *787
diet and nephritis 1202—E [Howard] 1654
—C
fractions new investigations 1368—E
in Blood See Blood
- PROTHROMBIN** See Blood Coagulation
- PTOLINES** acid and alkaline reaction in body 70
- PRURITUS** and [Tucker] 166—ab (treatment) 1567
vulvae treatment 69 (also etiology) 1999
- PSEUDARTHROSIS** nature treatment 146
- PSITTACOSIS** made reportable Maryland 1235
three cases New York 1133
- PSOITIS** See Muscles
- PSORIASIS** exfoliative dermatitis and 153
treatment autobemotherapy [Barksdale] 1855
—ab
treatment salicylic acid in ointment fatal [Sonnicaud] 1160—ab [Reed] 1654—C
- PSYCHIATRY** American Board of (tabulated data on certification) 42 43 (examination) 1287
Congress of French Alliests and Neurologists (forty first) 1054
Congress of German Psychiatrists 2151
definition in 223
element in criminal jurisprudence 1057
fellowship available by National Committee for Mental Hygiene 1552
Infantile first International Congress on 1280
Kentucky Association organized 1730
new division Indiana 1132
Societa Italiana di psichiatria 371
Southern Association meeting 1135
- PSYCHOANALYSIS** American Association meeting 2076
- PSYCHOLOGY** variations in univolar twins 370
- PSYCHONEUROSIS** See also Neurosis
treatment benzedrine sulfate [Wilbur & others] *549 (Council report) *2064
- PSYCHOSIS** See also Epilepsy psychotic Mental Disease
after atobrine treatment of moloria 812
after using atropine [Dameshek & Fein silver] *561 (In eye) 1931
onemio (pernicious) and [Herman] 1075
—ob
heart rate unsteady [Whitehorn] 823—ob
in hyperthyroidism [Brom] 1233—ob 2089
Korsakoff's See Korsakoff's Syndrome
treatment cerebral leukotomy [Mattos Pimental] 91—ab
treatment theelin [Ault & others] *1786
urea clearance test in [Wyllie] 829—ab
war as a disease 721
- PSYCHOTHERAPY** in gynecology and obstetrics 1366—E
use of tests in 2151
- PSYLLATE SODIUM** See Jaws
- PTERYGIUM** treatment quinine, [Robinson] 990—ob
- PTOSIS** See Eyelids Kidneys
- PUBERTY** See Adolescence
- PUBLIC HEALTH** See Health
- PUBLICITY** ponc and polio 957—E
- PUDGING** Anna Page Chocolate 1127
- PULPERAL INFECTION** damages assessed for 803
treatment sulfanilamide 515 598
- PULPERIUM** complications mastitis prevention [von Brücke] 1322—ab
complications symptomatic steatorrhea [Lundsteen] 834—ab
complications toxic heart disease [Hult] 82—ab
complications tuberculosis pneumoperitoneum for [De Micheli] 995—ab
moving patient within first 24 hours after labor 1745
use of oxytocic drugs in [Doris] *1634
- PUERTO RICO** Medical Association 1096
- PULMONOT** for resuscitating new born [Henderson] 1561—C [Hurlbut] 2157—C
- PULP** workers sterility from sulfurous acid and chlorine 378
- PULSE** alternating measuring blood pressure in 1747
pulsteal artery method of obtaining 451
radial and transfusion [Fourcristier] 913—ab
1587—ab
volume in cervical rib 70
- PUNCTURE** See Edema Ganglions
- PUNISHMENT** of children 1137
- PUPIL DILATION** See Mydriatics
paralyzed response to pilocarpine 1839
- PURECO** Carbonic Acid Gas V D R 1365
- PURINE** Derivatives See Angina Pectoris
treatment
- PURITAN** Brand Lard 1043
- PURKINJE** JAN sesquicentennial 285
- PURPURA** eruption after sulfanilamide [Schonberg] *1035
fulminant (Henoch) [Glanzman] 1408—ab
haemorrhagic 528
haemorrhagic after sedormid [Kramer] 632
—ab
haemorrhagic (chronic) complicating pregnancy 1146
haemorrhagic course treatment [Winrobe & others] *1170
haemorrhagic cured with botanical borons (P vitamins) 2154
haemorrhagic liver fresh bone marrow and calcium for [Jerviot] 1240—ab
haemorrhagic (thrombocytopenic) peculiar form [Keil] 540—ab
in gonococcal septicemia [Hazel & Snow] *1275
menstrual [Smith] 1760—ab
with hemophilia like disorder in coagulation [Tschopp] 751—ab
- PUTTEES** and Buerger's disease 228
- PYELITIS** acute late effects in girls [Wharton & others] *1597
treatment mondelle acid in child aged 3 [Helmholtz] *1040
- PYELOCYSTITIS** B cell agranulocytosis after promistol flavum treatment [Borst] 829—ab
- PYELOGRAPHY** See also Ureteropyelography
descending in renal contusions [Di Nallo] 176—ab
study of gynecologic lesions effect on urinary tract [Kretschmer & Konier] *1097
subcutaneous in children [Trovis] 236—ob
- PYELONEPHRITIS** B proteus [Hirsch & Shapiro] *937
chronic and arteriol hypertension, [Butler] 2099—ab
- PYEMIA** actinomycosis with [Spoogenberg] 91—ab
- PILEPHLEBITIS** from perforating duodenal ulcer [Roberts & Hadler] *1629
- PYLORUS** spasm and stenosis [Knaauer] 914
—ab
stenosis (congenital hypertrophic) [Rowe] 1401—ab (Fredet Rammstedt submucous pyloroplasty) [Donovan] *558
- PYOMETRA** See Uterus
- PYORRHEA** alveolaris and vitamin C 797—E
- PYRETHRUM** ointment for scabies 894
- PYRIDIVM** urinary antiseptic [Walker] *1001
- PYROGEN** removal by osmotic filtration with Seltz filters [Co Tui & others] *250
- PYROL** 449—B1 1741—B1
- PYURIA** microbic [Wildholz] 168—ab
in new born [Miller] 746—ab
treatment ammonium monedote [Wheeler] 2020—ab
urticaria relation to 893
- Q
- Q** fever in meat workers Brisbane [Derrick] 1586—ab
- QUACKS** See also Nostrums under names of specific individuals or Baker etc
campaign against (Illinois) 1730 (New York) 1731 (France) 2150
International Committee to Combat Charlatanism 1922
- QUAKER** Naid Brand Table Syrup 1455
- QUAN-DA SAC** 1925—B1
- QUARANTINE** ship revised radio pratique' 137—E
- QUEENSLAND** Medical School See Schools Medical
- QUINCKE'S** Edema See Edema angioneurotic Urticaria
- QUINIDINE** not cause of rotary oscillation of eyeball 610
prolonged use amaurosis after 1829
- QUININE** Bisulfate See keratitis
plus prostigmin in diagnosing myasthenia gravis [Horvey] 1488—ab
Prophylaxis See Influenza
systemic reactions to 1299
toxic erythema or scarlet fever eruption? 1385
Treatment See also Keratitis Pneumonia
treatment local in ophthalmology [Robinson] 990—ob
- QUINTUPLETS** roentgen diagnosis in pregnancy [Hombien & others] *10
- R
- RABBIT** Fever See Tularemia
- RABIES** 287
antivirus treatment of epilepsy 381
immunizing dogs 377
in Alabama 1818—E
quarantine in King County Wash 284
treatment after dog bite 455
treatment calcium orol [Fillion] 2172—ab
vaccines Sempie and Pasteur compared 2098
virus effect of guinea pig passage on [Hurst] 624—ab
- RACES** See Indians Negroes
- RACKHAM** Fund See Foundations
- RADIATION** Therapy See Gonorrhea
- RADIO** See also Medical Abstracts at end of letter M Index to Organization Section
A M A broadcasts New York City schools use 1727—E
antioise campaign (Paris) 598 (New York) 1371
Baker (Norman) denied studio 375—B1
Canada cleans up 1546—E
Johnson (Hugh S.) commentator for Grove Laboratories 716—E
medical service to ships at sea center for closed Italy 1378
National Conference on Educational Broadcasting (second) 719
ship quarantine regulations revised radio prologue 137—E
Waves See Diathermy short waves
- RADIOACTIVITY** See also Hemangioma
therapeutic substances evaluation 723
thermal waters use 368
- RADIOLOGISTS** International Congress (Ruh) in Chicago 801
professional disability 888
- RADIOLOGY** Bulletin of InterSociety Committee for 1298
Huntington Radium and X Ray Clinic 2076

- RADIOLOGY**—Continued
teaching (to graduates) [Kirklin] *633 (to undergraduates) [Pendergrass] *634 (survey) [Moore] *637
- RADIO THERMY** See Diathermy
- RADIUM** action, mode of Medical Research Council report 1052
Emanations See Radon
irradiation blisters after 1064
irradiation brain changes after [Colwell] 992—ab
irradiation exophthalmos after [Schall] *1506
irradiation lungs and pleura changes after [Hsieh] 822—ab
irradiation recovery rate of skin from [Quimby] 1402—ab
irradiation tumors caused by [Hellner] 543—ab
reaction of cadavers skin [Paltrinieri] 319—ab
refining processes film shows 440
Treatment See Leukemia Menstruation disorders Radium Irradiation Uterus cancer etc
- RADIUS** fracture malunited Colles [Campbell] *1105
malformation hereditary [Montant] 541—ab
- RADON** gold seeds new method [Hames] 2097—ab
Treatment See Choroid cancer
- RAGWED** extract alum precipitate [Zoss] 310—ab
- RAILROADS** See also Transportation
Congress of Railway Surgeons 964
employees diagnosis of intoxication in 888
employees social insurance for 1554
South Manchurian new gymnasiums Japan 887
- RAMSTEDT FREDET** Operation See Pylorus stenosis
- RANNEY'S** Finest Brand Strained Unseasoned Products 433
- RAT BITE FEVER** new form [Lemierre] 748—ab
- RATS** destruction Amsterdam 1057
Laboratory See Animals
- RAWLEIGH'S** Nasal Relief 2157—BI
- RAY S R** fraudulent salesman 216
- RAYNAUD'S DISEASE** 976
vasomotor neurosis or 1927
- RAZORS** also safety type use in shaving [Hollander & Casseleman] *95
- RECORD** Book See Venereal Disease
- RECREATION** bill passed England 218
- RECRUITS** See Army
- RECTOSCOPY** differentiation of genital tumors [Schleyer] 321—ab
- RECTOSIGMOID** cancer treatment [Rankin] *1719
- RECTUM** See also Anus
Anesthesia by See Anesthesia
cancer avoidable common diagnostic errors [Grabam] 539—ab
cancer roentgen examination [Irsigler] 542—ab
cancer treatment [Rankin] *1719
cancer vesical dysfunction after abdominal perineal resection [Hill & others] *1184
Crisis See Tabes Dorsalis
endometriosis [Cattell] 745—ab
Fistula See Fistula
hemorrhage kaolin liquid petrolatum and aluminum hydroxide control [Fradkin] 464—ab
lesions symptoms from [Stone] *1679
atensosing proctitis [Stolte] 1086—ab
Temperature by See Temperature Body
- RED CIRCLE PILLS** 606—BI
- RED CROSS** American annual report 1823
Brand Periodic Pills 2005—BI
German collaborates in fight against disease 1827
- Headache and Neuralgia Remedy** 2085—BI
Pills 728—BI
- RED FIRE Ointment** 1925—BI
- RED PALM Oil** See Keratomalacia
- RED RAVEN** Splits 449—BI
- REFLEX** ankle clonus in infant at 3 months 183
mass and involuntary micturition [Langworthy] 237—ab
pleural as cause of pleural shock [Capps] *852
spinal in embryos [Windle] 1938—ab
testing dermatograph for [Stern] *346
- REFRIGERATION** electrical and dehydration of food 1386
electrical bazaar (methyl chloride poison log) 2008 (austifur dioxide asthma) [Dowling] 2020—ab
electrical machine for summer air conditioning [Hayhurst & others] *1804
- REGIMENTATION** Federal See Medicine state
- REGISTRATION** See Licensure Vital Statistics
- REHABILITATION** of injured persons 367
RELAXATION progressive 1136
- RELIEF** See Emergency Relief
- RENZIEHAUSEN** Clinic for diabetes research Pittsburgh 963
- REQUIS** Charcoal Tablets 1741—BI
- RESEARCH** See also Patents
Clinical See Clinical
graduate study and 1555
laboratory in the Arctic 1916
Medical See also Medical Research Council
Medical Research Institute
medical Australia (Jones on opportunity for) 724 (Institute at Adelaide) 1056
Quarterly See Journals
spirit should be subsidized not taxed 481—ab
- RESETTLEMENT** Administration See Index to Organization Section
- RESIDENCIES** Internships and *693 715—E
- RESIN** vinyl toxicity used in lining beer cans 891
- RESORPTION** disorders adrenal cortex disease as [Verzar] 1407—ab
- RESORTS** See Health
- RESPIRATION** Artificial See also Respirator
Resuscitation
artificial Initiating in asphyxia neonatorum [Wilson] 2103—ab
artificial (prone pressure) carbon dioxide relation to [Johnson] 2103—ab
depth and type effect on basal metabolism 1138
paralysis [Flagg] 1216—C [Brahdy] 2006—C
testing bistamine tolerance test [Schlosser] 1767—ab
- RESPIRATOR** See also Resuscitation
Drinker in poliomyelitis end results 1130—E
Drinker in resuscitating new born [Henderson] 1561—C [Hurlbut] 2157—C
Emerson Infant Respirator 131
portable apparatus [Brahdy] 2006—C
tiding over fatal period before [Flagg] 1216—C
- RESPIRATORY TRACT** See also Bronchus
Lungs Pleura etc
Disease See also Bronchiectasis Bronchitis Pneumocystosis Pneumonia Tuberculosis Pulmonary etc
disease Duke Fingard method in 794—E
disease oxygen also helium inhalation for [Barach] 622—ab
Infections (acute) iodides in 2010
Infections sequence [Settel] 1233—ab
symptoms in syphilitic [Cannon] *351
- RESUSCITATION** See also Respirator
mechanical of new born with E & J Resuscitator [Martinez] *489 [Henderson] 1561—C [Hurlbut] 2157—C
- RETICULOCYTES** malaria plasmodia penetration into [Eaton] 629—ab
- RETICULO ENDOTHELIAL SYSTEM** blocking [Cosentino] 1943—ab
in leprosy 2153
- RETICULO HISTIOCYTOMA** with sarcoma de generation 291
- RETINA** detachment vision after operation for [Reese] 462—ab
preretinal connective tissue formation in vitreous [Knapp] 1937—ab
- RETINITIS** of pregnancy [Duggan] 2104—ab
- RETIREMENT** compulsory professors exempt France 58
- REVIORO** Tonic Health Tea 1741—BI
- RHEUMATIC FEVER** aortic commissural lesion in [Gross] 307—ab
as familial disease [Wilson] 825—ab
blood sedimentation rate vs Schilling count in 878—E
Cardiac Complications See Heart disease
clinical study [Chang] 627—ab
etiology virus [Eagles] 1585—ab
fatal [Bland] 1308—ab
patients transporting to Florida [Jones] 1308—ab
prognosis in and puberty [Leonard] 985—ab
role in endocarditis [Gross] 1847—ab
skin manifestations [Traub] 750—ab
treatment fever [Simmons] 604—ab
treatment vaccine [Jordan] *1444
vitamin C deficiency relation to [Weiss & Wilkins] *791 [Rinehart] 1394—ab
- RHEUMATISM** See also Arthritis
Acute Arthritis
American Rheumatism Association abstract of proceedings 1153 1228 1307 1394 1481
Arthritis See Arthritis
clinic Rackham Fund maintains Michigan 962
Empire Rheumatism Council to control 1998
French League Against (International symposium on) 287 720 (International Rheumatology Day) 1051 1212
Heart Disease See Heart complications
heritability 288 1919
International Congress on consulting centers 1824
juvenile London County Council prevention plan [Core Smith] 316—ab
muscular effect of jaundice on primary fibrositis [Hench] 1481—ab
treatment radioactive thermal waters 368
treatment vaccine [Ismael] 1229—ab [Jordan] *1444
- RHINITIS** vasomotor zinc ionizations for 2011
- RHODIUM** Treatment See Frambesia Syphilis
- RHUBARB** leaves danger of eating *60—E
- RHUS** transmission by smoke from fire of poison ivy plants 729
- RIBOFLAVIN** in insulin shock therapy of schizophrenia [Freudenberg] 93—ab
N R R 507
significance for surgical diseases [Laubert] 543—ab
Synthetic Roche 507
- RIBS** cervical and scalenus anticus syndrome 877—E
cervical pulse volume in 70
- RICKETS** alleged decalcifying effect of cereals Council report 30
anemia relation to [McDonough] 167—ab
metabolic background [Gubner] 238—ab
prevention by sun exposure New York 809
prevention Viosterol (A R P 1 Process) in Oil 1126
prevention vitamins A and D preparations dosage Council recommendation 507
roentgen changes in children [Kilian] 1495—ab
role in heart disease [Weiss & Wilkins] *791
treatment in infant allergic to viosterol 452
treatment vitamin D and hepatic function 2073—E
treatment vitamin D resistant to [Aibrigt] 1397—ab
- RICKETTSIA** fever differential serologic properties [Marlan] 1238—ab
- RIGIDITY** See Encephalitis Epidemic sequels
- RINGWORM** See also Epidermomycosis
diagnosis dermatitis between fingers 226
etiology Trichophyton gypsum [Dowling] 992—ab
In shoes ultraviolet rays for destroying 1563
- RISAL** Liquor Cresolic Compound 1925—BI
- ROAD** Accidents See Automobiles
Dust See Dust
- ROBIN** Freshlike Brand Strained Unseasoned Products 587
- ROCKEFELLER JOHN D** gifts to Rumania for research 726
- ROCKEFELLER** Foundation See Foundations
Institute (changes in staff) 365 (diseases under investigation) 1550
- ROCKY MOUNTAIN Medical Journal** See Journals
Spotted Fever See Spotted Fever
- ROYER TEST** 291
- ROENTGEN RAYS** action (general biologic) histamine effect on [Forfota] 996—ab
action mode of Medical Research Council report 1052
burning sensation after treatment 1930
department at St Luke's 1460
Diagnosis See also Heart compression kidneys trauma Peptic Ulcer Tuberculosis military
diagnosis Austrian Society discusses 668
effect on nervous system 60
fluoroscopy possible harm to x ray operator 1300
Irradiation See also Ovary Pituitary
Roentgenotherapy Spleen
Irradiation blood vessels changes after [Windholz] 1405—ab
Irradiation (Buckys) lesions from [Katz] 1162—ab
Irradiation lesions after [Korbler] 471—ab
Irradiation lungs and pleura changes after [Hsieh] 822—ab
Irradiation stimulates corneal immunity 510—E
Irradiation tumors caused by [Hellner] 543—ab
sickness in cancer use of congo red for 1838
sickness vitamin B₁ hydrochloride for [Martin] 2097—ab
skin reaction to in cadavers [Paltrinieri] 310—ab
skin reaction to relation to use of metallic substances 1146
skin recovery from effects of [Quimby] 1402—ab
Tomography See Larynx cancer unit (Long Island College Hospital) 215 (another million volt Boston) 438
- ROENTGENOGRAMS** See also Medical Radiology
abstracts at end of letter M
spatial representation in (third dimension) 220
- ROENTGENOGRAPHY** See Arteries Gallbladder Knee Pregnancy
- ROENTGENOLOGIST** regulate title x ray specialist Buena Vista 61
- ROENTGENOLOGY** Austrian Society of second congress 968
- ROENTGENOTHERAPY** See also Amenorrhea Arthritis gonorrheal Bladder tumors Cancer treatment Diabetes Insipidus Leukemia myelogenous Lymphogranuloma Venereum Phlebitis Roentgen Rays Irradiation Sterility Thrombophlebitis Typhoid Whooping Cough
Coutard's Method See Cancer treatment dosage 296
dosage (depth) in epilation irradiation [Iroppe] 471—ab
effects on tissue surrounding gliomas [O Connel] 1080—ab
- ROGER'S** (Dr) Relief Compound 2000—BI
- ROO MO RUB** 1920—BI

ROOMS See also House Housing Sickrooms apparatus for measurement of daylight in 442
Schoolroom See under School
ROSE Radiotherapy Unit 1724 1905
ROSENBERG'S Improved Great Century Oil 1060—BI
ROTONAL Insect dust possible toxicity 1836
ROUSSY GUSTAV, named rector of U of Paris 1648
ROYAL College of Surgeons joint meeting of Académie de chirurgie 966 1464
Medico Psychological Association report of Mental Deficiency Committee 1991—E
RUBELLA and meningio encephalitis [Read] *654
RUBIAZOL chemical formula 1725
RUBINSTEIN HELENA 65—BI
RU CO Female Tonic Wonderful Health Laxative 1832—BI
RUHERB 2156—BI
RUMANIAN Medical Association 725
RUNNER'S Combined Eczema Lotion 2156—BI
RUNNING fracture of anterior superior spine of ilium from [Mooney] *866
RUPTURE See Diaphragm Spleen Symphyses Thoracic Duct
RURAL See Index to Organization Section Hospitals See Hospitals Physicians See Physicians
RUSSIA, foreign letters from 59
SOCIALIZED MEDICINE IN SOVIET UNION by Sigerist 1911—E
RUST See Steel
RUTHERFORD Lord death 1734
RYE Flour See Flour
Lifestaff Natural Grain Meal 1637

S

SACRALIZATION See Spine
SACRO ILIAC JOINT lesions differentiating from hip and lumbar lesions 2087
Strain See Medical Legal Abstracts at end of letter M
tumor episcroiliac lipoma [Ries] 1756—ab
SAFETY National Safety Congress and Exhibit (sixth) Kansas City Mo 1134
Razors See Razors
SAILORS health insurance for Italy 1378
ST LOUIS Medical Society See Index to Organization Section
SALICYLATES See Acid acetylsalicylic Acid salicylic
SALIVA cell count in myelogenous leukemia [Allen] 905—ab
excessive salivation from dentures 299
Inhibitory effect on tubercle bacillus [Pia secka Zeyland] 1858—ab
SALIVARY GLANDS secretagogue action [Bolter] 321—ab
SALMONELLA Bacillus enteritidis septicemia [Frank] 88—ab
sulphister septicemia, [Ravitch & Wasblag ton] *1122
SALPINGITIS See Fallopian Tubes Inflammation
SALT See also Sodium chloride craving for in Addison's disease 1566
free diet [Stöcklin] 1675—ab
free diet diarrhea and intestinal flora 1047—E 1638—E
Iodized See Goiter prevention of Reduced Iron See Iron
poor diet as diagnostic test in Addison's disease 607
tablets for heat—possible overdose 972
water distribution in nursing [Kerpel Fro nius] 750—ab
Watkins Brand Iodized 1815
SALYRGAN diuretics 2007
SALYSAL 1906
SAN FRANCISCO Exposition See Golden Gate Session See American Medical Association Index to Organization Section
SAN JOAQUIN Valley Fever See Erythema Nodosum
SANACAPS 2005—BI
SANATORIUM See also Tuberculosis Federation of American Sanatoria changes name 514
SANDALWOOD OIL urinary antiseptic [Walter] *999
SANDERSON'S (Dr P C) Indian Herbs of Joy and Blood Cleanser 2005—BI
SANDLEY FEVER etiology [Coles] 1763—ab
SANITATION See also Hygiene model village at Paris exposition 1289
SANO-THERME Table 65—BI
SANO-VAPOR DEXENE 1060—BI
SANTAS MANUEL A death 2002
SAPONIN systems hemolysis in nephritis in [Herrald] 1845—ab
SARATOGA Ointment 449—BI
SARCOID Boeck's [Nickerson] 743—ab
SARCOMA See also Lymphosarcoma Medical Legal Abstracts at end of letter M degeneration in reticulo histiocytoma 291 metastasis (distant) and aspiration biopsy [McLean] 1579—ab
osteocytic after mild injury 453
SARCOPHAGA See Myiasis
SAUER'S vaccine See Whooping Cough Immunization

SAUERBRUCH Dr, German Nobel prize 2002
SAWDUST as cause of allergy (asthma) 525
SAXOPHONE playing in pulmonary tuberculosis 454
SCABIES parasitic nature A M A resolution on discovery by Bonomo and Gestoni 44
treatment pyrethrum ointment 894
SCALP See also Alopecia Hair Head burns from celluloid combs lighting [Fox] *1978
cerebriform nevus resembling cutis verticis gyrata [Hammond] 988—ab
injuries classification [Moore] *860
seborrhea after permanent wave 450
SCAPULA See Interscapulovertebral Space
SCAR See Cleatrix
SCARLET FEVER antiserum treatment of acute rheumatic polyarthritis [Eason] 317—ab
complications and relapses reinfection as cause [Allison] 173—ab
complications non nephritic edema [Zischinsky] 1590—ab
Dick test, [Ker] 172—ab
epidemic Germany 220
eruption or toxic erythema from quinoline 1385
immunization artificial 455
immunization protamine in 300
immunization sequence [Stewart & Plaiou] *1520
In inoculated and noninoculated children 290
patents [The Scarlet Fever Committee] 1833—C
treatment convalescent serum [Fox] 1487—ab
SCARLET RED Sulfonate—National 2141
SCHAAFS Evaporated Milk 433
SCHICK Fluid See Diphtheria Immunization
SCHILLER Iodine Test See Uterus cancer
SCHISTOSOMA japonicum cerebral infection with [Greenfield] 2104—ab
SCHIZOPHRENIA See Dementia Praecox
SCHLEYER CARL death 1920
SCHOLARSHIPS See also Fellowships donations for Argentina 148
Guggenheim Foundation for Brazilians 1466
Howard at Ohio State U 1822
Medical Research Council 441
SCHOOLS See also Children school Students University Medical Legal Abstracts at end of letter M Index to Organization Section closing panic publicity and police 957—E communicable disease control in [Ferrell] *835
health education and health services in [Rogers] *842
hearing problems in [Newhart] *839
light in schoolroom [Jackson] *841
medical inspection reform Belgium 602
medical supervisor examination for position New York 718
New York City use A M A broadcasts 1727—E
nutrition problems in [McLester] *838
of aerial protection (national) Belgium 596 888
of basic medical sciences A M A Council to publish list *664
physical education in Belgium 372
physical examinations in Japan 289
SCHOOLS MEDICAL See also Education Medical University and under names of specific schools admission requirements *659 *664
Africans medical faculty urge establishment 1377
Association of American Medical Colleges 1287
by states *667
description *676
for women London 1918
foreign U S citizens enrolled in *673
*674 *675
in U S 1905 1937 *671
Internship required by *667 715—E
recognized statistics *660 *665
survey by A M A 715—E
Teaching in See Education Medical tuition fees *672
SCIATICA etiology intervertebral disks [Barr & others] *1265 (prolapse) 1553
treatment fasciotomy [Ober] *554
SCIENCE Academy of See Academy American Association for Advancement of (exhibit at Indianapolis) 964 (symposium on syphilis) 2077
basic medical schools of Council to publish list *664
British Association for Advancement of preclinical address on evolution 1135
he also serves who waits 18—ab
Kaiser-Wilhelm Gesellschaft for Advancement of 1648
Patents See Patents
SCIENTISTS degrees for U S S R 59
persecuted society for protecting England 802
SCLEROSIS See also Arteriosclerosis Liver cirrhosis amyotrophic lateral sclerosis in 2008
multiple cholesterol metabolism in [Frisch] 177—ab

SCLEROSIS—Continued
multiple effect of heat and cold in [Simons] 1400—ab
multiple treated by normal human serum [Stransky] 916—ab
multiple, vascular thrombosis [Putnam] 391—ab
SCOPOLAMINE accidental use of for homatropine [Dameshek & Felsinger] *561
Therapeutic See Bursitis
SCOTLAND See Index to Organization Section
SCOTOMA Bjerums 229
SCOTT'S Nose and Throat Drops 1653—BI
SCROTUM cancer fatal cases [Heary] 1667—ab
SCURVY asymptomatic wound healing and peptic ulcer [Ingalls] 1489—ab
heart disease in [Taylor] 174—ab [Weiss & Wilkins] *791
treatment salt of reduced iron and ascorbic acid [Moan] 909—ab
SEASICKNESS treatment tucotoca in 894
Lenggenbager's theory value of prone position [Tobler] 2172—ab
SEASONS See also Climate Weather cycle of tuberculin allergy [Rigoni] 995—ab
effect on habituation to morphine, [Amster] 1240—ab
SEATTLE Times See Newspapers
SEATWORM Infestation See Oxyuriasis
SEAVIOR 449—BI
SEBACEOUS GLAND cysts from massage cream 453
SEBORRHEA of scalp after permanent wave 450
pathologic chemistry 2153
SECONAL narcotic habit from 527
SECRECY Professional See Privileged Communications
SECRETARY See Societies Medical
SEDIMENTATION Reaction See Blood
SEDORIMID hemorrhagic purpura from [Kramer] 632—ab
SEEDS patients sensitive to its pollen but not to 878—E
SELENIUM toxicity pathology [Smith] 1077—ab (acute sore throats from) [Motley & others] *1718
retention and elimination 2144—E
SELLA TURCICA enlargement of extracellular origin [Haas] 243—ab
SEMEN See Aspermia
SENECIO poisoning 1377
SENGARIAN Ointment (formerly Hungarian Ointment) 606—BI
SENSATION See Parasthesia
SEPTICEMIA See also Bacteremia Medical Legal Abstracts at end of letter M
B enteritidis sporadic case [Frank] 88—ab
B proteus in pylonephritis [Hirsch & Shapiro] *937
bacteremia and 497—ab
gonococci [Hazel & Snow] *1275, [Hoffmann & Schneider] *1447
otitis after mastoiditis [Fenton] 536—ab
pneumococcus protozoal soluble in [Millet] *2188
sulphister complicating meningococci [Ravitch & Washington] *1122
SERGEANT EMILE retires 1826
SEROLOGIST opening for Arkansas 363
SERTOTHERAPY See Diphtheria paralysis Hemotherapy Hyperthyroidism Meningococcus infection, Pneumococcus Infection Pneumonia Sclerosis multiple Spider bite Typhoid
SERUM See also under Blood antibactericidal effect [Hughes] 1674—ab
Convalescent See also Actinomycosis, Miasis Scarlet Fever
convalescent American Human Serum Association organized, 366
convalescent serum center [Fantus] *130
disease of nervous system [Kraus] 236—ab
Goat See Hyperthyroidism
Nephritis See Nephritis
Normal Human Serum See Sclerosis multiple
Pneumonia See Pneumococcus
precipitin for testing for human blood medical case 896
Sickness See Anaphylaxis and Allergy stores of for emergencies Germany 602
SEWERS workers in spirochetal jaundice 1128—E
SEX See also Fertility Impotence Virilism changing in goats billy goat which gives milk 1658
changing of chicks possible? 1659
degeneracy group to study Chicago 961
Hormones See also Androgens Estrogens Gonadotropic Principles Vaselines hormones vascular pathosis and cancer [Murray] 903—ab
Intercourse See Coitus Impotence Intergrades See Hermaphroditism Organs See Genitals Genito Urinary Tract perversion homosexuality and divorce 802
ratio especially in humans 1136
Science See Index to Organization Section
SEXOL Industrial hazard [McConnell] *61
SEXTON Brand (cherries plums) 31 (pine apple) 133 (fruit for salad) 1815
SHAVEGRASS Cut 1832—BI

SHAVING [Hollander & Casselman] *05
SHEEP tularemia from handling tick infested [Winter & others] *253
SHELANSKI Insufumal vaginal use of silver picrate powder 1453
SHELLS Kleenitz 1658
SHIMAZONO J death 280
SHIPS See also Sailors Seasickness medical service to ships at sea, center for closed Italy 1378
quarantine regulations, revised, 'radio pratique 137-E
smallpox on ocean liner 799
typhoid on ocean liner 800
SHOCK [Makel] 390-ab
Allergic See Anaphylaxis and Allergy
Electric See Electricity
in hyperpyrexia induced by hot moist air [Kopp] 1850-ab
Insulin See Dementia Praecox
medical after intravenous neosarsphenamine [Weinberg] 822-ab
secondary physiologic availability of fluids [Davis] 1313-ab
Traumatic See Trauma
SHOES ultraviolet rays destroy ringworm in 1563
SHORT WAVES See Diathermy
SHORTENING Clix 1043
SHOULDER See also Clavicle Interscapulo vertebral Space
dislocation (recurrent) 155
injury treatment prognosis 893
SHRAPNEL'S Membrane perforation from syringing ear 609
SHUFFLE foot See Foot
SICKNESS See Disease Vital Statistics morbidity
Insurance See Insurance health
Roentgen See Roentgen Rays
Serum See Anaphylaxis and Allergy
SICKROOMS removal of flowers from at night 379
SIGERIST HENRY E Socialized Medicine in Soviet Union 1911-E
SIGHT See Vision
SIGMOID See also Rectosigmoid cancer avoidable common diagnostic errors [Grabam] 539-ab
SILICATE ethyl industrial hazard [McCord] *767
SILICOSIS See Pneumoconiosis
SILVER Nitrate See Burns treatment Ophthalmia neonatorum
Picrate See also Trichomonas vaginitis Uterus Vaginitis
Picrate N N R description 29
picrate powder Shelanski Insufumal 1453
Picrate Weyhs 29 2141
Toxicity See Argyle
SIMMONS GEORGE H See also Index to Organization Section
death portrait 807 (funeral) 882 (Council appreciation) 1906
SINGER relation to laryngologists [Ridpath] *545
SINUS Thrombosis See Thrombosis
SINUSES NASAL cancer exophthalmos complications Irradiation [Schall] *1506
fracture involving [Coleman] *1613
infection trinitrophenol calcium carbonate for [Gray] 1577-ab
SINUSITIS NASAL chronic short waves in [Talia] 1408-ab
orbit infections from [Hubert] 1671-ab
treatment Duke Fingard method 794-E
SIP O 1741-B1
SKELETON See Bones
SKENE'S DUCTS anatomy 1837
SKIN See also Dermatology Tissues absorption of vitamins in soap 509-E
atrophy secondary macular [Scull] 1757-ab
Cancer See Epithelioma
care of new born [Sanford] 826-ab
diabetes phagedenic ulcer on heels of [Urbach] 1767-ab
diphtheria producing abscesses 732
Disease See also Dermatitis Eczema Pruritus Urticaria etc
disease exudative discoid and McElenoid chronic [Sulzberger] 987-ab
disease sensitivity to light in [Stokes] 2018-ab
disease tuberculous bacteremia in [Bosco] 1676-ab
Eruptions See Arsphenamine Ecthyma Erythema Quinque Sulfanilamide fungous flora of normal [Downing] 391-ab
gangrene [Meloney] 150-C
grafting in severe burns [Padgett] 618-ab
grafts foreskins for [Ashley] 1231-ab
hyperesthesia in acute salpingitis [Lahatte] 1316-ab
infection in plasters 1061
irritation and cancer in U S Navy [Poller] 1486-ab
Itching See Pruritus Scabies lesions occupational 722
lesions paratyphoid and related bacteria in [Fasting] 1581-ab
manifestations in articular rheumatism [Traub] 750-ab

SKIN-Continued
manifestations in leukemia [Galé] 395-ab
[Sannicandro] 629-ab
minerals lost through when sweating is avoided [Freyberg] 1670-ab
museum of models (Deleuw collection) 888
pachyderma with pachyhyperostosis [Glomo] 542-ab
procaine hydrochloride Injection, untoward effect 1929
protection (surgical) latex for [Narat] *655
Reaction See also Skin test Tuberculin reaction (allergic) histamine Injection in tensiles [Corelli] 1765-ab
Reaction (Intradermal) See Intestines antigens Undulant Fever
reaction testing (dermatograph) [Stern] *346 (pinwheel) [Wartenberg] 1294-C
reaction to pneumococcus vaccines [Well] 1232-ab
reactivity to killed tubercle bacilli [Carlinfant] 319-ab
roentgen rays and radium effect on skin of cadavers [Paltrinieri] 319-ab
roentgen rays effects on (relation to metallic substances) 1146 (rate of recovery) [Quimby] 1402-ab
sensitivity and hay fever 1474
sensitivity in asthma [Pearson] 317-ab
sensitivity to sunlight and sulfanilamide [Frank] *1011 [Newman & Sbarliti] *1036 [Grosjean] 1382-C
sensitivity to tuberculin [Sylla] 320-ab
sparing effect on [Hollander & Casselman] *98
shrinkage in pituitary obesity 381
Test See also Pregnancy diagnosis Skin reaction
test (group) for allergy 155
test with bacteria products [Traut] 988-ab
tuberculosis effect of pneumothorax 1920
tuberculosis treatment 1213
tumors and photosensitizing substances [Büngeler] 1321-ab
tumors, papillomatosis [Wise] 1486-ab
vegetable coloring matter action on 1838
SKULL See Cranium
SLEEP brain potentials in [Blake] 1397-ab
disorders hay fever with insomnia 454
disorders insomnia danger of inducing phobias addiction 2161
disorders narcolepsy benzedrine sulfate for (Council report) *2068 [Ulrich] 2101-ab
first few hours most restful? Value of intermittent periods 609
pathologic in brain tumors [Cox] 540-ab
SLEEPING SICKNESS See Encephalitis Epidemic Trypanosomiasis
SLEEPWELL Golden Floss Pillows 1723
SLIM 1741-B1 2085-B1
SLOWNESS in children 154
SMALLPOX develops at sea 799 1287
immunity to [Husband & Loy] *1797
outbreak (Iowa) 364 (Nagasaki) 709 (Chicago) 2074
vaccination before trip to orient 454
vaccination neutralizing principle for vaccine in lymph nodes [McMaster] 744-ab
vaccination order of sequence [Stewart & Platon] *1520
vaccination (subcutaneous) remains unappreciated Japan 1922
vaccine treatment of recurrent herpes simplex [Foster] 987-ab
SMOKING See Tobacco
SNAKE Venom See also Arthritis treatment Hemorrhage treatment
venom investigation 1138
SNYDERS (S P) Tablets Prescription No XX 2000-B1
SOAP A M A Advisory Committee on Advertising of use of non allergic 1723
shaving [Hollander and Casselman] *98
vitamins in Woodburys also Cosay skin absorption 509-E
SOCIAL HABITUATION invention and communication 1774-ab
SOCIAL HYGIENE American Social Hygiene Association creates Snow medal 2075
Foundation of America See Index to Organization Section
SOCIAL INSURANCE See Insurance
SOCIAL MEDICINE See Medicine
SOCIAL SECURITY ACT See also Index to Organization Section
A M A resolution relative to applicants for blind assistance 37
federal regimentation of physicians and hospitals 436-E
grants to states under title V 879-E
SOCIAL SERVICE (statistics on Italy) 291 (growth England) 1998
SOCIALIST MEDICAL ASSOCIATION organ Medicine Today and Tomorrow 1647
SOCIETIES MEDICAL See also under names of specific societies and under list of societies at end of letter S Index to Organization Section
meetings during Paris Exposition 287
Società di Dermatologia e Sifilografia 291 1920 2153
Società italiana di psichiatria 371

SOCIETIES MEDICAL-Continued
Society for Investigative Dermatology officers 440
Society of Hydrology and Medical Climatology 219
SODIUM aluminum silicofluoride toxicity 1929
benzoate Ampoules Caffeine with 875
bicarbonate oatmeal colloid bath 67
Bromide Treatment See Peptic Ulcer
chloride gastric secretion and acid base equilibrium [d Amato] 2024-ab
chloride hypertonie solution, necessary to modify? 1053
chloride intake (increased) in diabetes 455
chloride Physiological Solution of (Abbott Laboratories) 653
citrate (buffered) use in arteriosclerosis and thrombo angitis obliterans [Jablons] 522
-C (reply) [Bernheim & London] 523
-C
Morrhuate See also Fascia hernia Vari-cose Vels
morrhuate Ampul Vials Solution Sodium Morrhuate with Benzyl Alcohol 1365
Nitrite See Tobacco amblyopia
Pentobarbital See Pentobarbital sodium
perborate burns of oral mucosae 731
Psyllate Injection See Jaws
Thiosulfate See Gold Sodium thiosulfate
SOFKURD Mink 973
SOLDERING process toxicity 895
SOLDIERS See also Army Military War etc
hearts study 519
SOL KLEEN Tar Dermament to protect hands from 71
SOLVENTS volatile Industrial hazard in [McConnell] *762 956-E (banana oil) 2159
SOUTH African Medical Association gold medal to Dr W T Davies 61
SOUTHERN Medical Association 1793
SOUTHWESTERN Medical Association 1646
SOY BEAN supplement to Indian diets [Aykroyd] 1081-ab
SPAGHETTI Foulds 1637
SPANISH moss [Vetzer] 1076-ab
SPASM See Esophagus Muscles Pylorus Stomach
SPASMOPHILIA See also Tetany treatment calcium orally [Fillion] 2172-ab
treatment crystallized vitamin B [Widenbauer] 397-ab
SPEAKERS Bureau activities Iowa 1048
SPECIALISTS in social medicine France 723
SPECIALIZATION in medicine value [Bulc] *917
SPECIALTIES Advisory Board for officers 140
Board (certification) See American Board hospitals approved for residences in by A M A *693 2091
SPECIMENS pathologic discolored by blood 208
SPEECH difficulty with advisable to use hearing devices? 730
disorders Littauer Institute for 513
disorders stammering 2087
disorders stuttering lisping etc speech index of neurotic behavior [Greene] *187
disorders stuttering and slowness in children 154
SPERMATIC CORD myxofibroma possibly neurogenic [Volbarts] *1623
SPERMATORRHEA milky urine sign of 208
SPERMATOZOEA attempted sterility by immunizing to 1848
azoospermia and impotence 2160
SPHINCTER MUSCLES Oddis pathologic physiology [Walters & others] *1601
urethral incontinence in female [Kennedy] 1846-ab
SPHINX Herb Tea 2156-B1
SPIDER bite (black widow), 381 451 [Ginsburg] 619-ab (first record in Minnesota) [Denning] 1940-ab
bit (knoppe spider) specific antivenom (serum) for [Finlayson] 88-ab
bite possible late effects 380
SPINA BIFIDA occulta genito urinary tract disorders from [Berril] 1238-ab
SPINACH iron calcium vs vitamin content in vs tomatoes [Tisdall] 1760-ab
nutritional value Council report 1007
SPINAL ANESTHESIA See Anesthesia
SPINAL CORD See also Polioencephalomyelitis air embolism to after attempted pneumothorax [Wikler & others] *430
disease vitamin B complex for [Laffenberg] 630-ab
lesions fatal iodized oil diagnosis [Sicard] 1211
myelination in thymus extract (Hanson) for [Buckley] 81-ab
surgery 50 years 1828
symptoms in pernicious anemia 523
SPINAL FLUID See Cerebrospinal Fluid
SPINAL INJECTION See Injections
SPINAL MENINGITIS See Meningitis
SPINAL PUNCTURE convulsions after lumbar puncture 1385
SPINE See also Back Cauda Equina Coccyx Intercapulovertebral Space Sacro Iliac Joint

SPINE—Continued

- arthritis (progressive ankylosing) 1745
 cancer alcohol injections in 377
 diseases affecting Intervertebral foramina
 [Oppenheimer] 239—ab
 fractures and dislocations of cervical spine
 first aid and transportation [Brookes] *6
 fractures simple method in [Blackley] 467
 —ab
 hypertrophy of ligamenta flava cause of low
 back pain [Spurling & others] *928
 injury neurological symptoms due to 208
 (reply) [Katz] 733
 injury (war) treatment of bladder in 1288
 intervertebral disk lesions pain law in back
 and sciatica from [Barr & others] *1265
 intervertebral disk prolapse sciatica due to
 1553
 lumbar lesions differentiating from hip and
 sacro iliac lesions 2087
 osteo arthritis diagnosis correct? 1143
 osteomyelitis (pyogenic) [Mayara] 83—ab
 osteomyelitis (vertebral) [Browder] 617—ab
 sacralization of fifth lumbar vertebra [Wenzl]
 832—ab
 spondylitis (progressive ankylosing) 296
 SPIROCHETES in placenta 1046—E
 survival in fluid nitrogen [Jabnel] 1766—ab
 SPIROCHETOSIS See also Jaundice spiri-
 chetia
 Icterohemorrhagic in coal miners dishwasber
 etc 443 1826
 leptospirosis of mild type (seven day fever)
 Queensland [Clayton] 627—ab
 oral mercurial treatment [Grave] 1580—ab
 SPLEEN calcification (miliary) [Berman] 908
 —ab
 Enlargement See Splenomegaly
 eosinophilia after intravenous oil injections
 [Engelbreth Holm] 472—ab
 Excision See Splenectomy
 hypersplenism [Schmidt] 751—ab
 irradiation in gynecologic hemorrhages [Caf-
 fier] 1239—ab
 irradiation with short waves in hemolytic
 anemia [Groag] 93—ab
 myelocytes in normal human [Bertelsen] 1496
 —ab
 rupture (spontaneous) [Ask Upmark] 629
 —ab
 SPLENECTOMY fat metabolism disorders after
 [Zancan] 318—ab
 for liver cirrhosis [Bergeret] 830—ab 1053
 for purpura haemorrhagica [Wintrobe &
 others] *1170
 indications contraindications [Upbam] 1761
 —ab
 SPLENOEGALY erythroblastic puncture he-
 matopoietic centers in [Well] 912—ab
 gastroduodenal diseases and [Volterra] 1588
 —ab
 hematemesis (recurrent) with 2151
 tuberculous liver cirrhosis and Banti's dis-
 ease [Fittipaldi] 1084—ab
 SPLINTS bone of magnesium alloy 967
 SPONDYLITIS See Spine
 SPOTTED FEVER in Illinois 592
 in Iowa 52 281
 made reportable Maryland 1285
 vaccine available 142
 SPRAY Nasal See Poliomyelitis
 SPRIGGE SQUIRE editor of *Lancet* 212—E
 367 (successor appointed) 516
 SPRUE treatment and clinical course [Miller]
 1487—ab
 treatment cango red [Barker] 1485—ab
 SPUR Calcaneal See Calcaneum
 SPUTUM See also Pneumonia
 paraffin embedding in lung cancer [Mosto]
 542—ab
 SQUIBB Yeast Tablets 127
 SQUILL destruction of rats Amsterdam 1057
 SQUINT See Strabismus
 SQUIRRELS Plague infected See Plague
 STAINING leprosy and tubercle bacilli with
 methylene blue injection 291 1920
 tissues of biopsy from aspiration technic
 [Agliarolo] 470—ab
 STAIRWAY See Heart function test
 STAMMERING See Speech disorders
 STAPHYLOCOCCUS disorders specific toxoid
 therapy [Raman] 628—ab 867
 endocarditis superimposed [McMillan & Wil-
 bur] *1194
 food poisoning [Timmerman] 1590—ab 1994
 pathogenic isolation of [Chapman] 237—ab
 Toxoid Squibb 2141
 STAROV'S Health Diet 1060—BI
 STATE BOARD Internship required by *667
 715—E
 STATE BOARD REPORTS
 Alabama 611 1749
 Arizona 301 1301
 Arkansas 733
 California 322 1568 1660
 Colorado 229 814 1749 2091
 Connecticut 382 456 1748 1749
 Delaware 1568
 District of Columbia 610
 Florida 1475
 Georgia 1066
 Hawaii 229 2162
 Idaho 611
 Illinois 978 2012

STATE BOARD REPORTS—Continued

- Indiana 1749
 Iowa 301 2162
 Kansas 456
 Kentucky 1222
 Louisiana 896
 Maine 814
 Maryland 382 1387
 Michigan 1221 1748
 Minnesota 72
 Mississippi 1749
 Missouri 301 1839
 Nebraska 733
 Nevada 382 1749
 New Hampshire 301
 New Mexico 156
 North Carolina 1931
 North Dakota 2012
 Ohio 1066 2011
 Oklahoma 1475
 Rhode Island 301 2162
 South Dakota 156
 Tennessee 156 1222
 Texas 72 1387
 Utah 978
 Vermont 2091
 Virginia 528
 Washington 1568
 Wisconsin 72 1066 2162
 Wyoming 814
 STATE LABORATORIES See Laboratory
 STATE MEDICINE See Medicine state
 STATISTICS See also Vital Statistics
 PRINCIPLES OF MEDICAL STATISTICS by A
 Bradford Hill 713—E
 STATLER J L 375—BI
 STEATORRHEA See Feces fat in
 STEEL rusted from sweating 1837
 STEINBERG Method See Peritoneum
 STEKETEE'S Worm Destroyer 1060—BI
 STERILITY See also Medical Abstracts
 at end of letter M
 diet effect on [Watson] 993—ab
 endocrine and gynecologic aspects [Baron]
 1578—ab [Litzberg] *1871
 etiology treatment in women 1919 1928
 in men 1920
 in pulp workers using sulfurous acid and
 chlorine? 378
 treatment irradiation [Kaplan] 1755—ab
 treatment of obstructed tubes by diathermy
 and insufflation [Mintz] 821—ab
 treatment vitamin E [Martin] 465—ab
 STERILIZATION SEXUAL See also Medico-
 legal Abstracts at end of letter M
 by injecting semen 1838
 roentgen with fractional repeated doses
 [Morigliano] 1859—ab
 25 000 persons sterilized U S 719
 STERILIZATION SURGICAL of air in oper-
 ating room with u v rays [Hart] 170—ab
 of cocaine solution 977
 STILLBIRTH See also Twins stillborn
 syndrome (habitual) [Young] 314—ab
 STOCK'S Nu Tone Tonic 2085—BI
 STOCO for Colds 2157—BI
 STOKELY'S (liver soup) 133 (vegetable soup)
 1043 (apple sauce) 1201
 STOLICAL 1925—BI
 STOMACH See also Epigastrium Gastro
 Intestinal Tract
 Acidity See also Stomach inflammation
 Stomach secretion
 acidity analysis and leukapenic index
 [Long] *23
 acidity effect on iron retention [Barer] 165
 —ab 1281—E
 acidity glomerulonephritic anemia relation to
 [Tawnsend] 2095—ab
 acidity hydrogen peroxide as depressant of
 [Culmer] 461—ab
 acidity in pernicious anemia [Kahn] 1755
 —ab
 acidity lack of free hydrochloric acid in
 1657
 acidity magnesium trisilicate neutralizes
 hydrochloric acid [Mann] 172—ab
 cancer early recognition 1553
 disease and splenomegaly [Volterra] 1588
 —ab
 Disorder See also Stomach secretion
 disorder upsets in child with positive
 Wassermann 973
 diverticulum with subcardial stenosis signs
 [Leval] 1319—ab
 gastroscopic and roentgen study compared
 [Schindler] 1940—ab
 gastrascopy at hypochromic anemia achlar-
 hydia atrophic gastritis syndrome [Morri-
 san & others] *188
 hemorrhage diet unrestricted in [Meulen-
 gracht] 2025—ab
 inflammation acidity in and bacterial flora
 [Mahia] 915—ab
 inflammation (antral) and spasm [Golden]
 *1497
 meat extracts as stimulants of [Baan] 1583
 —ab
 motor functions after resection [Barbèra]
 1588—ab
 mucin virulence of *Haemophilus influenzae*
 1283—E
 Perforation See Gastro Intestinal Tract
 Peptic Ulcer
 photography 2008

STOMACH—Continued

- preparations treatment of pellagra [Petri]
 1322—ab
 roentgen study mucosal pattern technic and
 kymographic records [Shlumer] *1963
 secretion acid base equilibrium and chlorides
 [d Amato] 2024—ab
 secretion bactericidal power of juice, [Sebas-
 tianelli] 1161—ab
 secretion bromine in juice [Chatagnon] 89
 —ab
 secretion disorders short wave treatment
 [Benassi] 831—ab [Neidhardt] 996—ab
 secretion effect of calcium on amount and
 acidity [Celia] 1494—ab
 secretion of acid histamine test of 1565
 suction (nasal tube) resulting in alkalosis
 and death [Taylor] *267
 Surgery See also Peptic Ulcer surgical
 treatment
 surgery anemia after resection [Manzade]
 2109—ab
 surgery partial gastrectomy [Lake] 992—ab
 tissues defensive factors [Carlson] 712—ab
 STOMATITIS Vincent's See Angina Vincent's
 STOOLS See Feces
 STOVARSOL (acetarsone) See Trichomonas
 vaginalis
 STRABISMUS nonparalytic surgery far [Hir-
 wan] 1584—ab
 treatment importance to public health 1377
 STRAIN See Back and Medical Abstracts
 at end of letter M
 STRAMONIUM Treatment See Paralysis agitans
 STREAM See Water
 STREET Accidents See Automobiles accidents
 Cars See Transportation
 Dust See Dust
 STREPTOCOCCUS anaerobic infections 590—E
 bacteremia [McNeal & Cavallo] *2139
 faecal infection, mandelic acid cure [Helm-
 holz] *1040
 hemolytic toxins and antitoxins titration by
 flocculation [Rane] 82—ab
 in milk stored at atmospheric temperatures
 [Pullinger] 1856—ab
 Infections See also Scarlet Fever Strept-
 tocococcus anaerobic Throat sore etc
 Infections dimandiphenylsulfone for [But-
 tie] 626—ab
 Infections (fulminating) in infants [Reclor]
 311—ab
 Infections sulfanilamide for 358 598
 [Bliss & Long] *1524
 viridans hypersensitivity and focal infection
 [Weisberger] 313—ab
 STRICHNINE Treatment See Diphtheria
 paralysis
 STUDENTS See also Children school stu-
 dents Medical
 health album press service national bureau
 and other Nazi innovations 445
 health lectures for in high school Ia 1548
 STUDENTS MEDICAL See also Graduates
 Internships etc
 Association of 2076
 birthplace *662 *665 *666
 by classes *671
 by sex *669
 by states *667
 first year physical examination Paris 1375
 first year preliminary education *664
 foreign number seeking honorary diplomas
 decrease France 1375
 health of England 1374
 Negro *671 *672
 part time and special *669 *670
 registration new regulations 142
 resident and nonresident *666
 socialized medicine decreases number of new
 ones Vienna 1465
 statistics *669
 Teaching See Education Medical
 U S 1905 1937 *671
 STUPOR conditions after insulin treatment in
 schizophrenia [Salm] 833—ab
 STUTTERING See Speech disorders
 STUTTGART Disease See Darts
 SUCTION device (simple external) [Tenapry]
 1158—ab
 Gastric See Stomach
 SUFFOLK Brand Evaporated Milk 1201
 SUGAR See also Carbohydrates Dextrase
 Lactase (crass reference)
 consumption vs diabetes increase [Sossklad]
 631—ab
 solution (hypertonic) to reduce intracranial
 pressure [Jackson] 1231—ab
 SUICIDE causes 796—E
 pathogenesis prevention [Franks] 1076—ab
 SULFANILAMIDE action made of [Bliss &
 Lang] *1524
 agranulocytosis (fatal) from [Young] 1159
 —ab [Jennings] 2170—ab
 American brands examination by A J A
 Chemical Laboratory 348
 anemia (acute hemolytic) from [Harvey &
 Janeway] *12 [Kahn] *100, [Jennings]
 2170—ab
 -Calc 359
 chemical formula 1725
 extra lactate solution dispensed by Dealer
 Evans and Company 1567
 cyanosis from [Marshall] 1314—ab
 distribution in organism [Marshall] 2020—ab

SULFANILAMIDE—Continued
Elixir of Sulfanilamide Massengill (deaths from) 1367—E 1456—E *1538 *1539
1544—E *1725 1727—E [U S Secretary of Agriculture] *1985 1992—E (renal lesions from) [Keston & others] *1509 (Chemical Laboratory series) *1531 *1724 (chemical examination) [Schaeffer & others] *1532 (toxicity studies on rats) [Gelling & others] *1532 (pathologic effects) [Cannan] *1536 [Ruprecht & Nelson] *1537 [Hagbusch] *1537 [Beall] 1561—C 1011—E [Richter] 1926—C
eruptions [Hageman & Blake] *642 [Men-ville & Archinard] *1008 [Gadman & Levy] *1009 [Frank] *1011, [Newman & Sharlitt] *1036 [Schanberg] *1035 [Salvin] *1038 [Schwenker] 1314—ab [Gras-jean] 1382—C [Finney] *1982 [Myersan & others] *1983
fever (specific) reaction to [Hageman & Blake] *642
Gane & Ingram 1543
kidney excretion of [Marshall] 2019—ab
Lederle 359
Lilly 1365
Merck 359
methemoglobinemia from [Paton] 316—ab (methylene blue in) [Wendel] 1216—C
Moasanto 1543
N N R 358 (description revised) 1454
National 1543
optic neuritis from [Bucy] *1007
P D & Co 1543
restrict sale and use (California) 1048 1729 (New York) 1915
Quibb 359 1089
sulfhemoglobinemia from [Paton] 316—ab 515 1128—E [Archer] 1585—ab
toxic effects 515
treatment must be used with care 1128—E [Tarbell] 1316—ab
treatment of empyema [Gay] 2100—ab
treatment of erysipelas [Green] 626—ab [Snodgrass] 1159—ab [Marzollo] 1765—ab
treatment of gas gangrene [Bohman] *254
treatment of gonococcal infections [Ballenger & others] *1037
treatment of gonorrhea [Reuter] 238—ab (in pregnancy) 527
treatment of malaria [Diaz de Léon] 1940—ab
treatment of meningitis [Martin] 1675—ab
treatment of meningococcal and pneumococcal infections [Brannham] 312—ab
treatment of pneumonia [Heintzelman] 389—ab [Millet] 1940—ab
treatment of puerperal hemolytic streptococcus infections 588
treatment of urinary tract infections [Walther] *1003 [Helmholz] *1030 [Kenny] 1082—ab
SULFATE Ferrous See Anemia nutritional
SULFHEMOGLOBINEMIA after sulfanilamide [Paton] 316—ab 515 1128—E [Archer] 1585—ab
SULFO KRESOL TABS 2005—B1
SULFONAMIDE See Sulfanilamide
SULFUR See also Acid sulfurum
Anhydride Vapors See Pediculosis
diastole asthma from in refrigerator repair man [Dowling] 2020—ab
used to improve nails 68
SULLIVAN'S Indian Oil 1653—B1
SUMNER'S Lung Salve 1925—B1
SUN See also Light sensitivity Ultraviolet Rays
effect on sympathetic system 62
exposure preventing rickets in New York City 809
Stroke See Heat stroke Medical Legal Ab-stracts at end of letter M
sunshine in soap 509—E
SUNLAMPS See also Ultraviolet Rays lamp New Century 1904
SUNLIGHT Brand Oleomargarine 1455
SUNNY Skies Brand Evaporated Milk 1455
SUPPOSITORIES See also Mercurin
anal lycopodium granuloma resulting from [Antopal & Rabblins] *1192
Silver Picroate See Uterus Vagina
SUPRARENALIN Solution 1 100 (for oral in-jection) 1543
SUPRARENALS See Adrenals
SUPRIFEN chemical formula *2065
SURGEONS See also Orthopedics Railroads American College of 1135
SURGERY See also Diathermy Electrosur-gery under names of specific organs and diseases
Academy of See Academy
American Board of examination postponed 595
Anesthesia In See Anesthesia
diabetes mellitus relation to [Abell] 238—ab
disease action of transfused blood in [Geske] 631—ab
disease vitamin B rôle in [Lauber] 543—ab French Congress 1735
German Society congress 145
Institute of Buenos Aires 1139
medicinal and tend to converge 1111—ab
modify hypertonic saline solution as now employed in? 1053
North Pacific Surgical Association 2077

SURGERY—Continued
operating room explosions in, [Caste] 171—ab 1052
operating room light and color for 1064
operating room sterilization of air with U V rays [Hart] 170—ab
Orthopedic See Orthopedics
Plastic See also Eyelids ptosis Vagina
plastic in automobile injuries [Strath] *940
pastoperative azotemia and polypeptidemia [Ferracani] 242—ab
pastoperative blood lipids [Boyd] 1317—ab
pastoperative blood platelets [Mazzini] 629—ab
pastoperative care in bile tract operation [Payne] *1436
Pastoperative Complications See Embolism Thrombosis
pastoperative Donaglog reaction blood plate-lets and sedimentation rate [Perazzo] 469—ab
pastoperative headache [Koster] 619—ab
pastoperative medication in cured morphine addict 1839
responsibility in limits 146
Royal College of and Académie de chirurgie joint meeting 966 1464
shock (cerebral vascular) [Frisch] 2100—ab
skin protection with latex [Narat] *655
Sterilization In See Sterilization Surgical
Technic See also Sutures
technic change in character of workmanship 417—ab
vitamin importance to 146
Western Surgical Association 2077
work in military hospitals 1921
SUTURES See also Index to Organization Sec-tion
absorbable made from fetal membranes [Johnson] 538—ab
catgut tetanus prevention 1288
SWALLOWING technic in painful dysphagia [Flesch] 1085—ab
SWEATING negative insensible [Frohlich] 93—ab
night phthisis treatment [Hofmann] 1861—ab
prevention effect on loss of minerals through skin [Freyberg] 1670—ab
rusted steel from 1837
SWEDISH Government Telegraph and Telephone Board aids tuberculosis campaign 596
SWEET'S Comfrey Linament Sweet's Kura A Kal Tablets 1060—B1
SWIMMING leukocyte picture during [Kell-ner] 1677—ab
SWINEHERDS disease of [Fntzer] 1083—ab
SYNVESTER'S Genuine Haarlem Oil 606—B1
SYL WEY 2156—B1
SYMPLECTOMY effects in hypertension 973
lumbar for abdominal pain [Diez] 176—ab
lung parenchyma modified after [Biasini] 469—ab
relapse after [Simmons] 2022—ab
SYMPATHOBLASTOMA See Neuroblastoma
SYMPHYSIS PUBIS traumatic rupture treat-ment [Sommer] 542—ab
SYNCOPE as results of circulatory disorders [Herrmann] 907—ab
fainting 2088
SYNCTIAL Reaction See Pregnancy diag-nosis
SYNTHALIN hypoglycemic therapy induced with 795—E
SYPHILIS See also Chancroid Venereal Dis-ease Index to Organization Section
A M A motion picture film on reservations 958—E
blindness prevention and [Berens & Gald-berg] *777
capillaroscopy [Nicolai] 1764—ab
Cardiovascular See Cardiovascular Disease
syphilia
clinic (new) Maryland 798
congenital and prenatal [Cole] *580 (reply) [Halcamb] 972—C
congenital aphthalmaplegia and gastric up-sets in child 973
congenital prevention [Hogan] 169—ab
congenital safe for persons with it to marry? [Cale] *584
congenital Wassermann test of card blood reliable? 451 (replies) [Davies] 977 [Carmila] 1065 [Heller] 1654—C 1930
central (clinical lecture on) [Parran] *205 (Chicago Medical Society approves plan) 592 (New York City plan) [Clarke] *1021 (sources of infection traced Indiana) 1284 (Y M C A to cooperate) 1997, (grad-uate instruction in) 2071—E
central committee on (Colorado) 51 (Ariz-ona) 592 (Missouri) 718 (West Vir-ginia) 719 (National) 1923
Diagnosis See also Syphilis serodiagnosis
diagnosis determining status in patient 1146
diagnosis (insufficient) treatment on 1300
diagnosis tracing through common ailments [Cannon] *348
early arsenoxide (maparsen) in [Parsons] 85—ab
early artificial fever and chemotherapy in [Simpan] 1576—ab
early benign hepatitis [Wangb] *1487—ab

SYPHILIS—Continued
endemic nonvenereal syphilis bejel 802
familial behavior 1828
history clinical description dating 1363 or before [Holcomb] 972—C
incidence in general population insane insti-tutes and penitentiaries 1062
incidence in Negro [Halloway] 164—ab
incidence more cases reported Iowa 717
infectiousness from food and ordinary assa-ults 455
Institute on Cleveland 1372
latent treatment [Cannan] *357 527
pregnancy and [Tams & Clahr] *198 298 451 (replies) [Davies] 977 [Cormia] 1065 (treatment) 1145
reinfection or relapse 1565
research on blachemist wanted for 1997
resistant treatment by injecting streptobacil-lary vaccine (dmeleos) [Fiall] 914—ab
Serodiagnosis See also Wassermann Test
serodiagnosis American Committee on Evalua-tion of Serodiagnostic Tests report 134—E [Wlener] 294—C [Parran & others] *425 437—E (correction) [Holmer] 522—C
serodiagnosis Hinton test Davies modifica-tion [Davies] 465—ab 537—ab
serodiagnosis Ido calar test 972
serodiagnosis Melnick test 1931
serodiagnosis premarriage tests tax labara-tories use Kahn instead Illinois 511
serodiagnosis questionnaires seek public opinion Chicago 363
serodiagnosis wards of Childrens Aid Society undergo tests Illinois 363
seronegative mothers (untreated) of syphilitic children [Waugb] 2100—ab
spraycetes in placenta 1046—E
survey of volunteer citizens California 880
symposium at American Association for Ad-vancement of Science 2077
tertiary after malarial and recurrent fever therapy [Pilez] 244—ab
third generation [Clark] *1038 [Heller] 1654—C
tonsillectomy in contraindicated 895
Treatment See also under Syphilis early Syphilis pregnancy and etc
treatment 379 1221 1299 1385 1747
treatment and license to drive motor car 1473
treatment arsenamine dermatitis [Epstein] *117
treatment arsenamine sensitivity in 228
treatment bismuth compounds 151
treatment heavy metals sensitivity to 370
treatment iodobismutol [Barnett & Kulchar] *1715
treatment mercury arsenamine and bis-muth effect on leukocytes [de Lillo] 90—ab
treatment pregnancy urine hormones 1031
treatment rhodium [Jahnel] 177—ab
treatment state provides drugs Alabama 707
treatment Trisodarsen (formerly Triarsen) Council report 1125
treatment ultraviolet and autochemotherapy [Baer] 1234—ab
virus filtrability 291
yaws and [Turner] 462—ab [Holcomb] 1742—C
Wassermann fast 527
SYPHILOLOGY American Academy to be or-ganized 44 1208 1916
American Board of (examination) 1823
International Congress on 43 1134
Società di Dermatologia e Sifilografia 291 1920 2153
SYRACUSE University College of Medicine (building dedicated) 2075 (plan of medical care) [Bailey & Welskatten] *2136 2144—E
SIRUP brands accepted 359 1201 1455
SYSTONE 2085—B1
van SZENT GYÖRGYI ALBERT Nobel Prize awarded to 1733 1912—E 2153

SOCIETIES

Acad —Academy	Med —Medicine
Am —American	Nat —National
A —Association	Phar —Pharmaceutical
Coll —College	Phys —Physicians
Conf —Conference	Rec —Recreation
Cong —Congress	Ry —Railway
Conv —Convention	Soc —Society
Dist —District	Sur —Surgery
Hosp —Hospital	Surgs —Surgeons
Internat —International	S —Surgical
M —Medical	

Académie Ducheane de Baulagne Paris 441
Acad of Dermatology & Syphilology 1916
Acad of Physical Med 514 1287 1552 2077
Acad of Tropical Med 1823
Aero M A 1645
All Union Antimalaria Conf Moscow 59
Am Acad of Dermatology & Syphilology 1208 1916
Am Acad of Ophthalmology & Otolaryngology 1051 1462 1917
Am Acad of Orthopedic Surgs 964 2077
Am Acad of Tuberculosis Phys 56

Societies—Continued

- Am A for the Advancement of Science 366
964 2077
Am A of Anatomists 514
Am A of Genito Urinary Surgs 284
Am A of M Mkk Commissions 56
Am A of Obstetricians Gynecologists & Ab
dominal Surgs 1287 1916
Am A of Railway Surgs 1208
Am A of School Phys 1823
Am A for the Study of Golder 1287
Am A for the Study of Neoplastic Diseases
595
Am Birth Control League 440
Am Bronchoscopic Soc 56
Am Clinical & Climatological A 595 1135
1462
Am Coll of Chest Phys 514
Am Coll of Radiology 1208 1552
Am Coll of Surgs 514 1135 1645
Am Cong of Physical Therapy, 883 1373
Am Dermatological A 56
Am Dietetic A 1208
Am Hosp A 801 1208
Am Human Serum A 366
Am Laryngological A 719
Am Laryngological Rhinological & Otolologic
Soc 56
Am M Golfing A 141 1916
Am Neurological A 56
Am Orthopedic A 56
Am Pharmaceutical A 216
Am Proctologic Soc 1462
Am Psychoanalytic A 2076
Am Public Health A 1051 1373
Am Radium Soc 216 440 1208
Am Red Cross 1823
Am Rheumatism A 1153 1228 1307 1394 1481
Am Roentgen Ray Soc 1208 1552
Am Sanatorium A 56
Am Social Hygiene A 882 1823
Am Soc of Clinical Pathologists 56
Am Soc for the Control of Cancer 56
Am Soc for the Hard of Hearing, 1208
Am Soc of Tropical Med 1823
Am S A 56
Am Therapeutic Soc 284
Am Urological A 284
A of Am M Colleges 1287 1823
A of Life Insurance M Directors 1823
A of M Students 2076
A of Military Surgs of the United States 382
1914
A for the Study of Allergy 216 964
Biological Photographic A 964
Birth Control Clinical Research Bureau, 440
Birth Control Council of America 440
Boston S A 142
Brazilian Institute for the Investigation of Tu
berculosis 595
Brazilian Soc of Orthopedic Surg & Traum
atology 120 1466
British A for Advancement of Science 1135
British M A 57 596 597 1553, 1825
California M A 1205 1913
Canadian M A 367 596
Central A of Obstetricians & Gynecologists
441 1641 1645
Chicago M Soc 592
Clinical Orthopedic Soc, 1051
Colorado State M Soc 437 880 1205 1287
Congrès International du Tourisme du Thermal
isme et du Climatisme 441
Cong of French Allergists & Neurologists 1054
Cong of the German Soc of Surg 145
Cong of Orthopedic Soc Berlin 1737
Cong of Otorhinolaryngologists Berlin 804
Cong of Psychiatries 371
Cong of Railway Surgs 964
Cong of Roentgenologists Vienna 968
Connecticut State M Soc 716 797
Delaware M Soc of 1131 1547
Florida East Coast M Soc 1459
Florida M A 511
Florida Soc of Dermatology & Syphilology 716
Florida Tuberculosis A 137
French Gynecologic Cong 599 1999
French Hygiene Cong 369
French League Against Rheumatism 720 1051
French Orthopedic Cong 1137
French Otorhinolaryngologic Cong 287
French Soc of Dermatology & Syphilology 965
French S Cong, 1735
French Urologic A 2079
Georgia M A of 52 961
German Anatomical Soc 1824
Harvey Cushing Soc 56
Hawaii Territorial M A 1287
Idaho State M A 592 1459
Indiana State M A 961 1284
Institute of Med of Chicago 438 1548
Internat Committee to Combat Charlatanism
1922
Internat Conf on Leprosy 284
Internat Cong of Comparative Pathology 1917
Internat Cong of Dermatology 1134 1733
Internat Cong for Experimental Cytology 1917
Internat Cong on Gastro Enterology 1373 1553
Internat Cong on Graduate M Study 1554
Internat Cong on Hepatic Insufficiency 1552
1647
Internat Cong of Industrial Med 722
Internat Cong on Infantile Psychiatry 1289
Internat Cong of Med 1137
Internat Cong on Mental Hygiene 56
Internat Cong of Military Surgs & Pharma
cists 1292
Internat Cong of Obstetrics & Gynecology 1373
Internat Cong for the Protection of Children
291 1136
Internat Cong of Psychotherapists 441
Internat Cong of Public Health Officials, 1290
Internat Cong of Radiology 801 1373
Internat Cong on Rheumatism 287
Internat Cong on Rheumatism & Hydrology
1824
Internat Cong of the Therapeutic Union 805
Internat Council on Ophthalmology 1051
Internat Hosp A 1051
Internat League Against Rheumatism 1212
Internat Organization Against Trachoma 1051
Internat Physiological Cong 1733
Internat Short Wave Cong 1139
Internat Spa Cong 441
Internat Union Against Tuberculosis 217 285
Inter Soc Committee for Radiology 1208
Iowa State M Soc 1043 1914
Kentucky Psychiatric A 1730
Kentucky State M A 364 881 1132
League of Nations 965
Louisiana Soc for Mental Hygiene 213
Maline M A 593 1206
Massachusetts M Soc 53
Michigan A of Industrial Phys & Surgs 1914
Michigan State M Soc 799 962 1549
Mississippi Valley Conf on Tuberculosis 964
1373
Mississippi Valley M Soc 284
Mississippi Valley Sanatorium A 964
Montana Health A 799
Montana State M A 54 439
Nat A for Nursery Education 514
Nat Committee for Mental Hygiene 1552
Nat Conf on Educational Broadcasting 719
Nat Cong of Obstetrics & Gynecology 217
Nat M A 964
Nat Research Council 514
Nat Safety Council 596
Nat Safety Cong 1134
Nat Soc for the Prevention of Blindness 1208
Nat Tuberculosis A 55 1645
Nebraska State M A 139
Nevada State M A 963 1461
New England Physical Therapy Soc 1820
New England Soc of Physical Med 1820
New Jersey M Soc of 365 881
New York Acad of Med 54 1461
New York State Women's M Soc 215
North America Radiological Soc of 1552
North Carolina M Soc of 719
North Carolina Radiological A 54
North Pacific S A 2077
Northwestern Pediatric Soc 881
Ohio State M A 1050 1133
Oklahoma State M A 1551
Oregon State M Soc 215 1207 1551 1644
Otorhinolaryngologic Cong of the Latin Nations
Bucharest 291
Pacific Coast Oto Ophthalmological Soc 140
Pacific Coast Soc of Obstetrics & Gynecology
1552
Pacific Northwest M A 595
Pan American M A 216 1462 2077
Pennsylvania M Soc of the State of 882
1050 1462
Polish M & Dental A of America 1208
Puerto Rico M A 1996
Radiological Soc of North America 1208
Rhode Island M Soc 149
Rocky Mountain Conf, 141
Royal M Soc 441
Rumanian M A 725
Soc for the Study of Asthma & Allied Condi
tions 1552
Soc of Surgs of New Jersey 799
South Africa M A 61
South Carolina M A 595
Southern M A 1733 2077
Southern Psychiatric A 1135
Southwestern M A 1646
Tennessee Valley M A 283
Texas State M A of 1462
Utah State M A 1134 1287
Vermont State M Soc 1134 1462
Virginia M Soc of 1134 1645
Virginia Orthopedic Soc 1822
Virginia Pediatric Soc 1822
Virginia Roentgen Ray Soc 1822
Virginia Urologic Soc 1822
Washington State M A 55 514
Western Ophthalmological Soc 800
Western Orthopedic A 284
Western S A 2077
Western Virginia M A 55
West Virginia Public Health A 1996
Wisconsin State M Soc of 800 1050 1287
1823 1996
Wyoming State M Soc 514
- T
- TABES DORSALIS Charcot joints and trauma
1927
form of dementia paralytica treatment 1831
rectopneic crises 732
treatment [O Leary] *1165
treatment trypanamide plus bismuth 142
TABLE Gee Valuable Elements of Milk 2156
—B1
- TACHYCARDIA paroxysmal in infants [Camp
bell] 173—ob
TAENIA Saginata See Tapeworm Infestation
TAKATA Reaction See Liver disorders
TALCUM powder granuloma [Fienberg] 744
—ab
TALIPES Equinovarus See Foot deformities
TAMPOONADE See Heart
TAMPONS See Menstruation
TANNIN See Acid tannic
TAPE See Adhesive Tape
TAPEWORM INFESTATION diagnostic signs
and symptoms [Penfold] 174—ab
In the South [Sunkes] 1438—ab
treatment anthelmintics in pregnancy 1638
TAR Cancer See Cancer
dermatom to protect worker's hands 71
TASTE ageusia after mastoidectomy [Ho] 1232
—ab
sensation perversion 813 1063
TATTOO powder surgical removal [Llodysay]
*1530
TAX See also Medical Abstracts at end of
letter M Index to Organization Section
Income assessment novel method for estab
lishing Rumania 61
Income deducting medical expenses for 801
TEACHER See Professors Vocal Teacher
TEACHING See Education Medical
TECHNICAL approved schools for *708
*709 *710
TEENJOE Ointment 1653—B1
TEETH See also Dental Dentifrices Gums,
Jaws, etc
cories calcium and vitamin D in pregnancy
to prevent (reply) [Gordon] 733
dentures excessive salivation from 299
extraction treatment of edentulous patient
1384
fillings electrogalvanism from 526
gold bridgework turning black 2011
hereditary and environmental influence 1213
infected and hypersensitivity [Welsberger]
313—ab
infection short wave diagnosis [Gutzeit] 543
—ab
lesions and systemic disease especially tu
berculosis 211—E
mottled enamel from fluorine in water
[Kemp] 1157—ab
pathognomonic of prenatal syphilis [Cole]
*540
TELECORD heart phase photographed in se
quence 969
TELLURIUM poisoning 1746
Treatment See Leprosy
TEMPERATURE See also Arctic Climate
Cold Heat Weather
atmospheric streptococcus in milk stored at
[Pullinger] 1856—ab
low spirochetes survival in fluid nitrogen
[Jahnel] 1766—ab
monthly mean New York City [Moster]
2157—C
TEMPERATURE BODY See also Fever
diurnal cycle establishing [Kaldman] 164
—ab
normal mouth or rectal? 451
rectal instrument for continuous reading
[Blerman] *867
TEMPOROMANDIBULAR JOINT See Jaws
TENDON, Achilles (short) bilateral foot strain
from 1220
sheaths ganglions puncture with large bore
needle [Bears] *1626
sheaths tumor with myeloplaxes [Santero]
913—ab
TERMINOLOGY See also Words and Phrases
under Medical Abstracts at end of
letter M
Basile nomenclature in anatomy 1473
coma defined [Brody & Hayman] 1833—C
non allergic decision of A M A Advisory
Committee on 1723
psychiatric definitions 228
recurrent laryngeal nerve [Batson] 1562—C
TERRALINE Creosote 1060—B1
TESTIMONIAL Vital Ex 1560—B1
TESTIS atrophy 2010
excision in pseudobromphroditism? 881
Hormones See Androgens
inflammation acute orchitis 296
inflammation orchitis from undulant fever
296 (reply) [Harris] 1390
treatment of migraine in women by oxidation
ferments from [Zajack] 94—ab
tumor chorionepithelioma [Bankoff] 832—ab
tumor (malignant) in children [Campbell]
*1610
undescended antophysin antultrin S solu
tein and A P L for 1146
undescended gonadotropic substance for
[Dahl Iverson] 834—ab [Hess] 1753—ab
undescended gonadotropic substance not ad
vised in boy under 5 733
undescended pseudo and true cryptorchidism
[Hamilton] 1679—ab
undescended (right) and right scrotal hernia
1931
undescended treatment 1731
TESTOSTERONE Propionate See Androgens
TETANUS [Stewart] 1578—ab
after Fourth of July injuries *1805
after septic abortion 230

- TETANUS**—Continued
antitoxin not substitute for diphtheria anti-
toxin, 1474
bacilli isolation from street dust surgical
importance [Gilles] *484
catgut prevention 1288
diabetic gangrene and 144
hemolysis (total) in [Hall] 2021—ab
immunization alum precipitated toxoid 381
[McBryde] 467—ab [Gold] *481
prevention treatment [Kovtunovich] 1085
—ab
toxoid Combined Diphtheria Toxoid Tetanus
Toxoid Alum Precipitated Lili; 29
toxoid response to one year after immuniza-
tion [Jones] 1852—ab
treatment especially antitoxin [Yodh] 172
—ab
- TETANY** See also Spasmophilia
of new born [Zahorsky] 226—C
- TETRACHLOROETHYLENE** See *tetra*Chloro-
ethylene
- THALAMUS** syndrome 974
- THEAMIN** Treatment See Urination incont-
inence
- THEELIN** See Estrogens
- THEEOL** See Estrogens
- THEROBRONINE** Treatment See Angina Pec-
toris Cardiovascular Disease
- THEROPHYLLINE** See also Angina Pectoris
treatment Theamin (cross reference)
effect on intrathelial and venous pressures,
etc [Greene & others] *1712
- THERAPEUTICS** See also Hemotherapy Physi-
cal Therapy Roentgenotherapy Sero-
therapy Index to Organization Section
International Congress of Therapeutic Union
805
therapy of Cook County Hospital (blood pres-
ervation) [Fantus] *128
- THERMOMETERS** marking of Czechoslovak
law on 441
rectal continuous indicating [Blierman] *867
- THIAMIN** chloride term for Vitamin B₁ Hydro-
chloride Council report 952
- THIGH** See also Buttocks Gluteal Region,
Hip Joint
palm down back of cause relief [Thiele]
*1271
- THOMSON JOHN GORDON** death 720 966
- THOMSON STEWART C** memorial to coun-
try doctor 438
- THORACIC DUCT** ruptured traumatic chylo-
thorax from chylo intravenously for
[Bauersfeld] *16
- THORACOPLASTY** See Tuberculosis Pul-
monary
- THORACOSCOPY** See Tuberculosis Pulmo-
nary artificial pneumothorax in
- THORAX** See also Chylothorax Hydrothorax,
Pneumothorax
complications in aubdiaphragmatic infection
[Coope] 1586—ab
deep chest in tuberculin positive reaction
[Weisman] *1445
intrathoracic calcification in tuberculin posi-
tive infants [Brallier] 1852—ab
Knee Chest Exercises See Uterus retro
displacement
- THORIUM Dioxide Substitute** See Diodrast
- THROAT** See also Larynx Neck Tonsils
etc
disease urea in [Lery] 1232—ab
Sore See also Tonsils Infected
sore (acute) after exposure to selenium
[Motley & others] *1718
sore (atreticoecic) sulfanilamide for [Har-
vey & Janeway] *12
streptococcal from fibrinolytic activity [Jolly]
1759—ab
- THROMBO ANGITIS OBLITERANS** in Ne-
groes [Yater] 235—ab
lobellae sulfate effect on use in tobacco habit
[Wright & Littauer] *649
pultices and Buerger's disease 228
treatment intermittent venous occlusion,
[Collens & Wilensky] *2125
- THROMBOPEMIA** See Blood platelets
- THROMBOPHLEBITIS** See also Phlebitis
acute 69
complicating ulcerative colitis 1219
complications B proteus pylonephritis
[Hirsch & Shapiro] *937
femoral 1220
treatment acetyl beta methylecholine ionto-
phoresis [Murphy] 624—ab
treatment roentgen [Henschen] 175—ab
- THROMBOSIS** See also Embolism Thrombo-
phlebitis
allergic vascular reactions in 2152
complicating multiple sclerosis [Putnam] 391
—ab
coronary crisis in Addison's disease [Sacks]
619—ab
coronary differentiating from dissecting aneu-
rysm [Blackford & Smith] *262
coronary impending [Sampson] 740—ab
coronary incidence vs climate [Rosahn] 1294
—C [Master] 2157—C
coronary onset of [Master & others] *546
coronary trauma cause? 2088
coronary with transitional glycosuria 1829
- THROMBOSIS**—Continued
deep in lower extremities, arterial symptoms
[Lindgren] 908—ab
postoperative [Baneroff] 2017—ab
sinus (cavernous) [MacNeal & Cavallo] *2139
sinus (dural) in early life [Bailey] 2104—ab
sinus (lateral) internal jugular vein ligation
in [Novick] 621—ab (treated without liga-
tion) [Ersner & Myers] *919
- THYMIFORM** 1653—B1
- THYMUS** extract (Hanson) for myelination in
nervous system [Buckley] 81—ab
extract (Hanson) for myelination in nervous
system [Buckley] 81—ab
extract induce myasthenia with 147
irradiation effect on pancreas structure
[Bentivoglio] 995—ab
- THYROID** See also Goiter Exoph-
thalmic
crisis blood chemistry in [Maddock &
others] *2130
disease evidence that most is congenital
[Patterson] 1762—ab
extract clinical results in children [Jacob-
son & Cramer] *101
hormone action on immunity [Rocchini]
1942—ab
hyperplasia (primary) in one still born twin
[Warren & Shipner] *575
Hypertthyroidism See Hypertthyroidism
Hypothyroidism See Hypothyroidism
pathology 1828
sterility and [Liltzenberg] *1872
Surgery See Thyroidectomy
tuberculous infection and [Schedler] 914
—ab
tumor adenoma 2090
- THYROIDECTOMY** blood serum of goats after
for hypertthyroidism 71
blood sugar and cholesterol after [Atnan]
1162—ab
iodine given after fallacy [Davison] 312—ab
morbidity [Dinsmore] *179
myxedema or exophthalmos after 1747
pituitary changes after [Altschule] 1933—ab
total for congestive heart failure 210—E
(injury to recurrent laryngeal nerve)
[Quinlan] 809—C [Young] 1295—C [Bat-
aon] 1562—C [Quinlan] 2086—C
total in angina pectoris objections [Fro-
men] 89—ab
total in cardiac and vascular diseases [Sin-
ger] 752—ab
- THYROIDINE** antihormones detected by com-
plement fixation reaction [Bauer] *1442
- TIC Douloureux** See Neuralgia trigeminal
- TICKS** bite tularemia from Colorado 716
infested sheep tularemia from handling
[Winter & others] *258
paralysis in children [Barnett] *846
- TIFFENEAU MARC** appointed dean 2080
- TILE** setter xanthoma tuberosum of knees and
elbows in [Sugg & Stetson] *414
- TIME** See Journals
Enterprises See Index to Organization Sec-
tion
- TIPONA** Tablets 2005—B1
- TISSUES** See also Mucous Membrane (cross
reference) Skin
allergic manifestations in 2152
calcium deposits in 2011
connective and defense reactions 1169—ab
connective (prenatal) formation in vitreous
[Knapp] 1937—ab
penetration by Diesel engine fuel oil, [Rees]
*866
Perungulal See Nails
soft lesions in arthritis [Kling] 904—ab
- TNT** See trinitrotoluene
- TOBACCO** amblyopia acetylcholine sodium
nitrite for [Dugan] *1354
denicotinized in gastric diet [Bernay] 1942
—ab
effects of smoking on circulation 896
heart [Golston] 1582—ab
poisoning in infant from mother smoking cig-
arets [Wyckherd Bisdorf] 178—ab
smoking habit in coronary thrombosis [Mas-
ter & others] *548
smoking habit lobellae sulfate treatment
[Wright & Littauer] *649
vasomotor neurosis or Raynaud's syndrome
1927
- TOES** See also Nails
hallux valgus 523
overgrowth (local) [Cbandler] *1411
- TOLUENE** industrial hazard [McConnell] *764
- TOLUENO-AZO BETA NAPHTHOL** toxicity
[Chimenco] *493
- TOMATOES** brands accepted 133 277 587
1455
spinach compared to [Tisdall] 1760—ab
- TONOGRAPHY** See Larynx cancer
- TONGUE** coated 1145
painful, electrogalvanism from dental fillings
526
painful glossodynia 1297
- TONICS** alternative for man and dogs 455
- TONSILLECTOMY** in syphilis contraindicated
895
infectious? 221
results [Epstein] 462—ab
- TONSILLITIS** See Tonsils Infected
- TONSILS** Excision See Tonsillectomy
Infected. See also Throat, sore
infected in children, bismuth for, [Kobler]
177—ab
- TOOTH** See Teeth
- TORCH OIL** dermatitis [Kammer & Callaban]
*1511
- TOURS** See Pan American cruise
- TOXAMIN** decalcifying effect of cereals Coun-
cil report 30
- TOXICOLOGY** See Industrial poisoning, Medi-
cal Jurisprudence Poisoning
- TOXINS** See also Streptococcus
bacterial poisoning electrocardiogram in
[Weber] 1944—ab
- TOXOID** See Diphtheria Staphylococcus Te-
tanus
- TRACHEA** See also Laryngotracheobronchitis
obstructive lesions bellum inhalation in
[Kernan] 2018—ab
- TRACHEOTOMY**, epinephrine intratracheally
after [Green & Miller] *1903
in cellulitis of neck [New] 1672—ab
- TRACHOMA** experimental 1044—E
infectious agent [Jullanelle] 81—ab
International Organization against 1051
visual ravages Trachoma Clinics of Southern
Illinois [Gradle & De Francols] *253
- TRAFFIC** See Automobile Noise
- TRAILER** See Automobiles
- TRANSFUSION** See Blood Transfusion
- TRANSPLANTATION** See Grafts (cross refer-
ence)
- TRANSPORTATION** aervices physical examina-
tion of applicants Paris 1554
- TRAUMA** See also Chylothorax Diaphragm
Elbow Knee Nerves peripheral Medi-
cological Abstracts at end of letter M
Brazilian Congress of Traumatology (second)
1466
Charcot joints and 1927
coronary occlusion caused by? 2088
diabetes and 1474
Fourth of July injuries *1806, 1818—E
heart injury and 154
heart lesions due to blunt force [Munch]
322—ab
neurologic symptoms due to 298 (reply)
[Katz] 733
paralysis localization in relation to injury,
[Parker] 1404—ab
pelvic tumors affected by 2161
peptic ulcer relation to 1220
rehabilitation of injured persons 387
abock and concealed hemorrhage [Harkins]
619—ab
- TREATMENT** See Therapeutics
- TRIASEN** See Trisodarsen
- TRIBROM ETHANOL** See Anesthesia
- TRICASCO** 2156—B1
- TRICHINOSIS** and alcohol 1723—E
garbage fed hog [Hall] 746—ab
- TRICHLOROETHYLENE** See trichloroethylene
- TRICHOMONAS** intestinal infection [Do Muro]
1320—ab
vaginalls infest bladder [Nitschke] 170—ab
vaginalls leukorrhea 2007
vaginalls pathogenicity [Mohr] 544—ab
vaginalls vaginitis acetasone carbasone
silver picate lactose lactose with kaolin
or with eltric acid for [Hesseltine] *768
vaginalls vaginitis silver picate for [Mas-
call] 540—ab (use of Shlanski insu-
flator) 1453
- TRICHOPHYTON** gymeum ringworm due to
[Dowling] 992—ab
- TRIOBECTOMY** See Lungs surgery
- TRINITROPHENOL** (picric acid) See also Pol-
iomyelitis prevention
pseudo icterus possibly from 1146
Treatment See Sinuses Nasal Infections
- TRINITROTOLUENE** See Nitrotoluene
- TRISODARSEN** Council report 1125
- TROMBIDIOSIS** or chiggers 212—E
- TROPICAL** Malaria See Malaria
Ulcers See Ulcers
- TROPICAL MEDICINE** Academy of 1823
American Society of 1823
- TROPICS** acclimatization to Italians in Africa
62
- TRU** Tablets of Aspirin Tru Lax 2005—B1
- TRYPANOSOMIASIS** Chagas disease 1138
Chagas disease and complement fixation test
[Johnson] 308—ab
research on 1209
treatment aynthalin hypoglycemic shock 795
—E
- TRYPANAMIDE** Treatment See Nerves optic
Neurosyphilis
- TRYPTOPHAN** effect on gastric ulcer, [Furth]
1677—ab
Reaction See Meningitis tuberculous
- TUBERCLE BACILLUS** bacteremia in derma-
toses [Bosco] 1676—ab
killed skin reactivity to [Carlinfant] 319
—ab
saliva inhibitory effect on [Piasel & Zey-
land] 1846—ab
seasonal cycle [Rigon] 995—ab
short waves modify [Mennitt] 1494—ab
staining with methylene blue 291

TUBERCULIN Reaction See also Mantoux Test
reaction and BCG vaccine 144
reaction BCG vaccination of children effect on 599
reaction in nurses 58 2080
reaction (local cellular) in sensitized calves [Feldman] 2168—ab
reaction negative in children in infected families 1289
reaction positive in children tuberculosis in their contacts [Wells] 1398—ab
reaction (positive) vs deep chest [Welsman] *1445
sensitivity of skin [Sylla] 320—ab
test (intracutaneous) purified protein derivative vs O.T. [Law] 77—ab
test ointment patch [Wolfe & Hurwitz] *2042 (with saturated filter paper) [Vollmer] 2095—ab
testing with purified protein derivative [Whitney] 78—ab

TUBERCULOSIS See also Tuberculosis Pulmonary, under names of specific organs and diseases and Medicolegal Abstracts at end of letter M
allergy [Schulz] 915—ab [Hensel] 1860—ab
Argentina League Against center for 1139
blood changes after vitamin C and orange juice [Radford] 390—ab
bovine (freeing cattle from England) 143 (Maryland free from) 285 (fight against Netherlands) 289 (New York free from) 1373
Brazilian Institute for Investigation of 596
campaign Swedish government aids 596
case finding work Detroit plan [Vaughan & Douglas] *771 [Douglas] 1398—ab
complications diabetes [Dunlop] 394—ab [Schedtler] 914—ab
complications leukemia [Ryan] 1073—ab
conferences (graduate) 1994
control (law requires campaign Colombia) 142 (new division Colorado) 437 (notification of cases Japan) 888
Diagnosis See also Mantoux Test Tuberculin reaction Tuberculosis miliary Tuberculosis serodiagnosis
diagnosis mobile x ray unit Chicago 2074
diagnosis of latent suspected and early clinical forms [Hetherington] *1952
diagnosis pediatric 378
endocrines and [Schedtler] 914—ab
familial behavior 1828
hormones (sex) and 136—E
Hospital See also Tuberculosis sanatorium hospital (new Louisiana) 138 (overcrowded New York) 882
immunization BCG and tuberculin reactions 144
immunization BCG of children effect on tuberculin tests 599
in Australia 1556
in children 409—ab
in children immunization against whooping cough [Siegel & Goldberger] *1088
in children intermittent attacks of pains in legs age of? 1828
in children of infected families tuberculin reaction negative 1289
in children significant aspects [Tyson] *753
in children (young) fate [Rosenberg] 740—ab
in contacts of children who react to tuberculin [Wells] 1398—ab
in infants intrathoracic calcification in tuberculin positive [Bralley] 1852—ab
in laboratory animals and monkeys [Nègre] 241—ab
in medical students England 1374
in Negroes 1375
in nurses aid for New York City 799
incidence in Belgian coal miners 602
incidence in silicosis [Pope] 79—ab
Institute Louisiana 1370
International Union Against (prize) 217 1375 (tenth conference) 235
liver function test in [Balanesco] 320—ab
marriage advisable? 1557
meeting (Southern) 800 (Miss Valley) 964
miliary successive exacerbations in [Loe schke] 1161—ab
miliary x ray diagnosis [Steiner] 2167—ab
mortality in 1936 (Arizona) 960 (U S) 1645
prevention 1734
prognosis 1471
reinfection from reactivation of primary complex [Reichle] 1075—ab
Sanatorium See also Tuberculosis hospital sanatorium (Lake County Illinois) 2074 (dedicated N C) 2076
seal sale 1645
serodiagnosis flocculation test [Rytz] 235—ab
serodiagnosis Meinelcke's reaction [Fröhlich] 544—ab
serologic study [Brandt] 396—ab
treatment adrenal cortex extract [Pottenger] 906—ab
treatment Duke Fingard method 794—E

TUBERCULOSIS—Continued
treatment Fleischman Fund at Mount Sinai for 1133
treatment of latent suspected and early clinical types [Hetherington] *1952
treatment salt free diet [Stöcklin] 1673—ab
vaccine See Tuberculosis immunization

TUBERCULOSIS PULMONARY, acute in adolescents France 967
arm raising in 2009
artificial pneumothorax (extrapleural) in [Hautefeuille] 541—ab
artificial pneumothorax in 2081
artificial pneumothorax in arterial oxygen deficit in [Vorwerk] 1161—ab
artificial pneumothorax in closed and open intrapleural pneumolysis [Anderson] 538—ab
artificial pneumothorax in crepitant sounds indicate disappearance of air? [Kirch] 544—ab
artificial pneumothorax in left heart arterial air embolism after [Hall] *125
artificial pneumothorax in massive pleural effusions in [Rosenblatt] 1849—ab
artificial pneumothorax in pressure in exudate formation [Schill] 1860—ab
artificial pneumothorax in rare form of collapse [Abdulkadir Lulfi] 631—ab
artificial pneumothorax in thoracoscopy and cauterizing adhesions [Benjamin] 315—ab
blood pressure test in prognostic value [Kennedy] 79—ab
blood proteins after thoracoplasty [Lencel] 995—ab
blood sedimentation rate in 1835
cavities transthoracic injection of colloidal copper morphuate [Jacobs] 1074—ab
climate in 1298
complications pregnancy [Infanzotzi] 470—ab
death sudden in [Bonnamour] 1319—ab
diagnostic induced pain of nipple [Mazzetti] 1675—ab
diaphragmatic paralysis after, [Müller] 320—ab
exercise and rest in [Voute] 1675—ab
heart in [Goase] 171—ab
hematogenous [Zavod] *1693
hemoptysis (menstrual) [Sattler] 2025—ab
in children [Macgregor] 1583—ab (demonstrating tubercle bacillus) [Campbell] 2104—ab
of lower lobe [Weldman] 1849—ab
playing wind instruments in 454
surgical treatment airtight closure of chest after pneumolysis use of muscle plug [Overholt] 1938—ab
thoracoplasty in [Frederlander] 538—ab
[Lencel] 995—ab [Semb] 1855—ab (elastic) [Finocchetto] 2024—ab
Treatment See also Tuberculosis Pulmonary artificial pneumothorax in
treatment copper morphuate in 607 [Jacobs] 1074—ab
treatment gold salts [Courmant] 2023—ab
treatment gold salts intrapleurally intra pleural division of bands 442
treatment iodides contraindicated 2009
treatment lozenges in caries and erosion from 211—E
treatment of early form lasting cure [Amerson] *1949
treatment of night sweats [Hofmann] 1861—ab
treatment of pleural effusion 285
treatment pneumoperitoneum [Trimble] 986—ab (in puerperium) [de Michells] 995—ab
vitamin C nutrition in [Martin] 1311—ab

TUBERCULUM septi defined 2160
TUFTS Medical School 282 1206
TUGWELL BILL See also Index to Organization Section 1546—E
TUITION Fees See Schools Medical
TULANE University 364 (Rudolph Matas Library) 2074
TULAREMIA after tick bite Colorado 716
cause of death in [Foshay] 743—ab
diagnosis cross reactions in agglutination tests [Gilbert] 522—C
endemic prevent it from becoming 600
pneumonia (bilateral) roentgen study specific serum for [Blackford & Archer] *264
pneumonic from handling tick infested sheep [Winter & others] *258
treatment Antitularemic Serum Mulford (data by Dr. Foshay) 504
TULSA unbreakable lenses 1384

TUMORS See also under specific organs and types of tumors
dibenzanthracene [Andervont] 84—ab
etiology irradiation [Heller] 543—ab
Ewing's of femur [Smith] 1073—ab
experimental formation [Sauerbruch] 1676—ab
Granulosa Cell See Ovary tumors
hydrocarbons 1 2 benzoprene 62
Institute Chicago 1459
like growth in leukemias [Fleischacker] 321—ab
Malignant See also Cancer Sarcoma etc

TUMORS—Continued
malignant diagnosis sedimentation speed of stored citrated blood [Kosler] 1086—ab
malignant, effect of pregnancy [Smith] 1847—ab
malignant metastasis causing pathologic fractures [Ghormley & others] *211
malignant time factor in irradiation [Vielnick] 618—ab
Metastasis See Neuroblastoma Tumors malignant

TURNING Syndrome, [Halpern] 93—ab
TURENTINE vapors, industrial hazard [McConnell] *764
TUSSAMAG 1653—BI
TUTOCAIN value to prevent prophylaxis and treatment of seasickness 894

TWINS hereditarily vs environment 287
multiple dysostosis [Hurley] 1496—ab
still born primary thyroid hyperplasia in [Warren & Shipner] *575
uniovular psychic variations in 370

TYPHOID bacillus in drinking water tartaric acid destroys [Violle] 1587—ab
bacillus (killed) intravenously to treat undulant fever [Ervin & Hunt] *1966
bacillus, virulent antigen [Alchiburg] 1588—ab
buccopharyngeal sepsis in [Orgaz] 306—ab
carriers [McBurney] 1157—ab, (epidemic due to) 593
carriers radiation and cholecystectomy [Elson] 1755—ab
carriers surgery for [Colter] 165—ab [Lynn] 1403—ab
carriers survey in institution, [O Callaghan] 1081—ab
calatonia blood cells in [Mihella] 1237—ab
diagnosis cross reactions in agglutination tests, [Gilbert] 522—C
epidemic (from contaminated stream England) 143 (traced to carrier Michigan) 593 (from raw milk 3 deaths Ohio) 1207 (Brandon Vt.) 1822 (Croydon, England) 1997 2078
from ice cream 1920
H Antigen Vaccine See Neurosyphilis
immunally, thyroid hormone action on [Rocchini] 1942—ab
immunization advised before taking trip to Orient 454
immunization endotoxoid vaccine [Grasso] 1857—ab
immunization in private practice [Stewart & Platon] *1520
immunization (oral vs subcutaneous) concentration of agglutinin in [Moore] 1579—ab
leukocidin 280—E
on German ocean liner 800
quarantine regulations change Illinois 1914
treatment Felix's specific serum in [Cookson] 394—ab
vaccine fresh and stored [Mishulow] 392—ab
vaccine injection peripheral paralysis after [Robinson] 168—ab
vaccine state discontinues New York 1731
vaccine therapy (Nelson) in neurosyphilis 300

TYPHUS differential aerologic properties of rickettsia fever [Mariani] 1238—ab
dog or Stuttgart disease 228
vaccination 60 (Weigis) [Knack] 1085—ab

TYRAMINE chemical formula *2065

U

UDGA Tablets 605—BI 1925—BI
ULCER See also Bladder Colitis ulcerative Cornea Peptic Ulcer and Medicolegal Abstracts at end of letter M
Leg See Legs
phagedenic on basis of cutaneous diabetes [Urbach] 1767—ab
treatment cod liver oil locally, [Epslein] 78—ab
Tropical See also Leishmaniasis
tropical in Africans results of studies 1620
ULMEANU FLORIAN Boulevard prize to 291
ULTRASHORT Wave See Diathermy
ULTRAVIOLET RAYS Lamp See also Sun lamps
lamp (carbon arc) value of Landun Corporation 1217
lamp Eveready Carbon Arc 1042
lamp Fischerquartz Model Cold Mercury Arc 503
lamp General Electric Model F Quartz Mercury 1988
lamp Health Ray Twin Carbon Arc Sun Lamp 951
protection against vitamin C and oil of bergamot for [Urbach] 833—ab
ringworm in shoes destroyed by 1563
sterilization of air in operating room [Hart] 170—ab
Treatment See Eczema Syphilis treatment
UNBREAKABLE Leas Company Tulca 1331
UNDERGRADUATE Teaching See Education Medical teaching
UNDULANT FEVER Archives internationale des brucelloses 1648
bovine origina France 444
diagnosis 1218

UNDULANT FEVER—Continued

diagnosis brucellergin intradermal opsonic agglutination tests [Gould & Haddeson] *1971

diagnosis cross reactions in agglutination tests [Gilbert] 522—C

diagnosis intradermal vaccine [Ervin & Hunt] *1966

lung changes in [Lafferty] 467—ab

orchitis from 296 (reph) [Harris] 1300

transmission by flies [Negro] 1084—ab

treatment killed typhoid paratyphoid bacillus intravenously [Ervin & Hunt] *1966

UNEEMPLOYED See also Index to Organization Section

nutrition of of Utrecht 1650

young men physique 136—E

UNGUENALVE 1653—BI

UNITED STATES See also Index to Organization Section

Army See Army

Civil Service examinations (for bacteriologists) 883 905 (Childrens Bureau) 1825 (for biochemist) 1997

Congress Medical Bills in See Legislation

Dispensary Sec Dispensary

Navy Sec Navy

Pharmacopela See Pharmacopela

Public Health Service See Health

Secretary of Agriculture report on Ellvir of Sulfanilamide Massengill *1985 1992—E

Treasury Department Josephine Roche resigns from 1646

UNIVERSAL Pain Expeller Brand Liniment 1925—BI

Tonic Ginseng 2156—BI

UNIVERSITY See also Columbia Harvard Northwestern Oxford Yale

degrees for scientists U S S R 59

Graduate Courses See Education Medical Graduates See Graduates

hospitals admission of nonindigent 1465

of Brazil reorganization 1406

of California Library gift to 137

of Georgia Council action regarding 156

of Illinois Medical Library gifts to 1641

of Manchester chair of anatomy to F Wood Jones 510

of Minnesota (Rockefeller Foundation gift to) 53 (graduate courses) 962

of North Dakota Council action regarding 156

of Tennessee department of preventive medicine 964

semester schedule question Germany 444

Students See Students

UREA Clearance Test See Kidney function

Treatment See Ear diseases Nose diseases Throat diseases

UREMIA diagnosis Jaffé's color reaction for blood creatinine [Popper] 015—ab

URETEROPIELOGRAPHY (retrograde) to check kidney function before operation 2080

URETERS achalasia in children [Hepler] *1602

calculus correlated with vitamin A deficiency sign in eye [Ezlekson & Feldman] *1700

implantation in intestine (fatalities after) [von Mikulicz Radecki] 321—ab [Foley] 991—ab

molar functions in pregnancy [Cordaro] 914

—ab

URETHRA calculus tribrom ethanol as relaxing agent in removal [Jarman] 745—ab

injured danger of using local anesthetic 2010 (prevention) [Knappert] 2025—ab

tumors (malignant) in children [Campbell] *1600

URETHRITIS Gonorrhoeal See Gonorrhoea

nonspecific in influenza 810

nonspecific 1386 (from Gold Tex condom) 2009

URIC ACID determination criticism [Pinosebi] 994—ab

metabolism cerivamic acid effect on [Pescarmona] 1408—ab

URINARY TRACT See also Bladder Genito

Urinary tract kidneys Ureters Urethra

Calculus See also kidneys Ureters Urethra

calculus racial incidence [Cary] 168—ab

calculus therapeutic progress [Barney] 620

—ab

dilatations (nonobstructive) in children [Hepler] *1602

psychologic lesions effect on psychographic study [Kretschmer & Kanter] *1097

infection antiseptics (evaluation) [Walther] *999

(mandelic acid and sulfanilamide compared) [Helmbold] *1039

infections mandelic acid in [Schnohr] 323

—ab (Council report) 1989

infections sulfanilamide in [Kenny] 1082

—ab

infection treatment dietary control [Coombs] 210—ab

symptoms and abdominal diseases [Mertz] 1400—ab

symptoms in syphilis [Cannon] *353

—ab

—ab

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VENOM See Bee venom Snake venom
Treatment See Arthritis Paralysis agitans

VENTILATION See also Air conditioning
requirements [Yaglou] *947

VENTRICULAR FAILURE See Heart insufficiency

VERONAL See Medicolegal Abstracts at end of letter M

VERRUCA flat blismuth subsalicylate for 610 (correction) 801
infective in workers using bone glue [Mc Laughlin] 1857—ab
milker's warts [Bonnieville] 85—ab
aehorrhelic 1746
treatment injecting sclerosing agent [Hutton] 823—ab

VERTEBRA See Spine

VERTIGO aural Ménière's disease 2010 (in trancranial surgery of auditory nerve) 2000
cause of dizziness in head injuries [Glaser] 742—ab
perforation on syringing discharging ear 609

VESINES 1376

VETERANS See also Index to Organization
Section
Administration annual report 56
nurturing a national neurosis [Arling & Bate man] *1092

VICHY Water Powders (Artificial), 1741—BI

VICTORY Vapor Balm 1653—BI

VIDEX 2085—BI

VIN Vigorans 1741—BI

VINCE burns of oral mucosae from 731

VINTHENE (Council report) 656, (N N R) 658

VINYL resins toxicity of used in lining beer cans 891

VIOSTEROL A R P I Process in Oil, 1126 1567
allergy in infants 452
Condol and Erton 132
placenta calcification from use in pregnancy [Brehm] 1490—ab

VIRILISM adrenals in (specific staining reaction) [Broster] 166—ab (demonstration by perirenal air insufflation) [Mencher] *1338
androgen and estrogen excretion in [Kenyon] 1670—ab
arrhenoblastoma [Föbderl] 1493—ab

VIRUS See also Choriomeningitis Colitis ulcerative Foot and Mouth Disease in influenza Lymphogranuloma Venereum Rabies etc
fluorescence microscopy [Hagemann] 243—ab

VISCERA culture method for in Lindbergh apparatus 1210
isolating poisons from [Stewart] 2104—ab
pathology in measles [Degen] 742—ab

VISION See also Blindness Eyes Glasses etc
after retinal detachment operation [Reese] 462—ab
best lighting for dormitories 609
Conservation See Blindness prevention
loss of percentage 1474
Tests for Automobile Drivers See Index to Organization Section
tests given by opticians England 286

VISSCHER BOWMAN Test See Pregnancy diagnosis

VITAL CAPACITY variability [Arnett] 163—ab
venesection effect on [Budelmann] 319—ab

VITAL STATISTICS See also Population Medicolegal Abstracts at end of letter M
Index to Organization Section
birth rate France (marriages and) 145 (variations) 369 803 885
birth rate Germany 1212
birth rate increase Russia 60
birth rate vs death rate England U S etc 1638—E 1720—E
births number to a marriage [Cadwallader] 150—C
death rate Italy 2153
death rate variations France 369
morbidity and League of Nations 2142—E
Mortality See Cancer Infants mortality Tuberculosis etc
of Australia 221
of England 2078
of Illinois 213
of Japan 289 (control bill) 887
registration of births and deaths centenary England 143
sex ratio in human species 1136

VITAL-EX 1560—BI

VITAMINS A and D preparations dosage
Council recommendation 507
A crystalline isolation of 1992—E
A D B complex and C immunizing effect 714—E
A deficiency in adults vs auto driving at night [Jeghers] *756 (correction) 965
A deficiency ocular signs (Feldman's dark adaptation test) [Erickson & Feldman] *1706
A deficiency relation to kidney calculi [Ver-mooten] *857 [Randall & others] *1699 [Erickson & Feldman] *1706

VITAMINS—Continued

A elimination in feces, [Wendt] 1321—ab
A in halibut viscera [not liver] [Lovern] 1406—ab
A in human blood serum [Stepp] 1860—ab (in pneumonia) [Lindqvist] 1861—ab
A in urine a prognostic sign [Boller] 1162—ab
A International units per ounce of food [Jeghers] *758
A preparations hydroquinone as stabilizing agent Council report 1454
A reserves in health and disease 590—E
A sources and stability 1659
A treatment of burns 145
A treatment of keratomalacia [Aykroyd] 1236—ab
A utilization and carotene 1045—E
A utilization effect of mineral oil in foods Council report 1814
amount needed in low calory diet for obesity 610
B complex and nicotinic acid [Funk] 2086—C
B complex Kinney's Yeast Extract contain ing 276
B complex treatment of funicular spinal disease [Pfaffenberg] 630—ab
B complex use in restoring natural color to gray hair 976
B₁ and B₂ content of flour and bread 1054
B₁ and fatty livers [McHenry] 173—ab
B₁ C D treatment of chronic articular disorders [Mallwa] 1590—ab
B₁ hydrochloride thiamin chloride common name for Council report 952
B₁ hydrochloride treatment of x ray sickness [Martin] 2097—ab
B₁ intake relation to infant's mental and physical growth [Colby] 1846—ab
B₁ role in cardiovascular diseases [Weiss & Wilkins] *788 [Jones] 825—ab [Weiss] 986—ab
B₁ Squibb Yeast Tablets 1127
B₁ treatment of deafness 1930
B₁ treatment of herpes zoster 71
B₁ treatment of nervous diseases [Helman] 1084—ab
B₁ treatment of spasmophilia [Widenbauer] 397—ab
B₁ utilization and retention in children 33—E
B See Riboflavin Vitamin G
B₂ new dietary factor in mammalian liver [Halliday] 907—ab
C See also Acid cerivamic Scurvy
C and capillary rupturability 1054
C and concentrated milk for isolated camps 66
C and heat regulation [Hasselbach] 1588—ab
C blood changes in tuberculous patients after [Radford] 390—ab
C Cebone N R R 359
C deficiency relation to rheumatic fever [Weiss & Wilkins] *791
C deficiency role in cardiac disorders [Weiss & Wilkins] *791
C deficit in pregnancy [Gaetgens] 470—ab
C effect on blood coagulability [Terazawa] 1941—ab
C in Blood See Blood cerivamic acid
C in rheumatic disease [Bliehart] 1394—ab
C in Urine See Urine
C Nobel prize to Szent György 1733 1912—E 2153
C nutrition in pulmonary tuberculosis [Martin] 1311—ab
C protects against ultraviolet rays [Urbach] 833—ab
C relation to infection 288 [Faulkner] 535 ab [Harris] 1492—ab
C role in progressive muscular dystrophy [Hirata] 996—ab
C role in pyorrhea alveolaris 797—E
C treatment of genital hemorrhages in essential thrombopenia [Hildebrandt] 1321—ab
C treatment of necrotic diphtheria 601
C treatment of pollomyelitis [Jungeblut] 1758—ab
carbohydrate metabolism and [Schroeder] 2109—ab
content of common foods tables 1204—E
D See also Cod Liver Oil Rickets Viosterol
D adding to cereals Council report 30
D and arthritis Council report 132
D and hepatic function 2073—E
D antigenic characteristics [Steff] 1239—ab
D deficiency role in heart disease [Weiss & Wilkins] *791
D effects on caries during pregnancy (reply) [Gordon] 733
D hypervitaminosis [Hubbard] 1669—ab
D massive doses pathologic studies contra-indications 151
D Milk See Milk
D treatment rickets resistant to [Albright] 1397—ab
D and D₂ difference in action [Brockmann] 1943—ab
deficiency rôle in cardiovascular disease [Weiss & Wilkins] *788
deficiency syndrome in chronic alcoholism [Romano] 2096—ab
effects on tumor threshold [Davidson] 2169—ab

VITAMINS—Continued

E [Young] 314—ab [Martin] 465—ab
F See Acid linoleic Vitamin B₁
G See also Riboflavin
G Squibb Yeast Tablets 1127
hormones in relations to 1210
importance to surgery 146
in soap skin absorption 509—E
in spinach and tomatoes [Tisdall] 1760—ab (spinach only Council report) 1907
K [Quick] 66—C
P Szent György research on 1912—E 2154
pollomyelitis and [Toomey] 77—ab
VITA-PINE Bathol 1925—BI
VITILIGO neuro endocrine apparatus 2153
VITREOUS HUMOR muscae volitantes 523
preretinal connective tissue formation in [Knapp] 1937—ab
VOCAL TEACHER cooperation with laryngologist [Ridpath] *545
VOCATIONAL GUIDANCE use of tests in 2151
VOICE conditions in stutter type child [Greene] *187
VOLATILE Solvents See Solvents
VOLHARD'S Test See Kidney function test
VOMITING See also Seasickness
acetoneic attacks from ketogenic diet [Heymann] 83—ab
ketonemic in diabetic children [Hungerland] 2108—ab
of Blood See Hematemesis
of Pregnancy See Pregnancy
VOXOL 2005—BI
VULVA Pruritus See Pruritus

W

WALKER JOHN THOMSON death 1522 1647

WALKING See Claudication Intermittent Running

WALTER S Radiant Hair Rejuvenator 1741—BI

WAR See also Army Military Soldiers Veterans etc
abdominal wounds in 1649
as a disease 721
future methods and medicine 1646
Gas Warfare See Gas
in China See Chinese Japanese War
injury of bladder treatment 1288
injury of eye from mustard gas 516
International Peace Campaign 1918
Risk Insurance See Medicolegal Abstracts at end of letter M
Vienna's World War memorial to physicians, 600

WARDS Vitaminized Tonic Tablets 2156—BI

WARTS See Verruca

WASHINGTON State Medical Association See Index to Organization Section

WASSERMANN TEST blood for conserved with neutral sulfate of oxyquinoline 58
Fast Syphilis See Syphilis
in maternity work [Mackay] 1584—ab
in prenatal syphilis [Cole] *584
positive cord not reliable test of syphilis in new born 451 (replies) [Davies] 077 [Cornia] 1065 [Heiler] 1654—C 1030
positive in gastric adenocarcinoma 609
positive in unresolved pneumonia 1300 (reply) [Robertson] 1839
significance [Cannon] *357 1564

WATER. See also Bath Swimming etc
blood pressure (venous) after ingestion [Audaup Soubie] 1943—ab
contaminated stream and wells typhoid outbreak from England 143 1997 2078
Elimination Volhard's Test See Kidney function test
exchanges in lungs in decompensated heart disease [Calabrese] 1494—ab
in Blood See Blood
infusion fluids preparing [Co Tul & others] *250
microorganisms in tartaric acid destroys [Violette] 1587—ab
Mineral See Mineral Waters
salt distribution in nursing [Kerpel Fronius] 750—ab
supply brass plumbing 299
supply deadline for Indiana cities to stop lake pollution 1206
supply fluorine in (New Mexico) 881 (re-moval) [Elvove] 1581—ab
supply London's in air raids 516
supply model village at Paris exposition 1299
supply oil in 1838
Therapeutic Use See Hydrology

WATKINS Brand Salt 1815

WEATHER See also Climate
diabetes and 229
effect on eye disorders 1738

WEBER CHRISTIAN Disease See Panniculitis

WEEDS contact dermatitis blisters on legs and feet probably due to 812

WEGNER Brand (apple sauce) 587 (tomato juice) 1455

WEIGHT See Body weight

WEIGLS Vaccination See Typhus

WELLS Disease See Jaundice spirocheta

WELDING electric arc 975

WEST VIRGINIA University Council action on 156
WESTERN Reserve University 1461 1732
Surgical Association 2077
WESTINGHOUSE Electric Company gift for research in fever therapy 1286
WHEAT Cereals See Cereals
germ extract Squibb Yeast Tablets 1127
vitamin B₁ and B₂ in flour and bread 1054
WHEELER LEA BILL See also Index to Organization Section
scope 1546—E
WHISTLE Edelmunn Galton use 154
WHITE CROSS Quinine and Iron Tonic 1653—B1
WHITE S Herb Tonic 1653—B1
WHITE HOUSE Brand Condensed Milk 1455
WHITEHORN Test See Blood epinephrine
WHOOPING COUGH complications leukocytosis (extreme) [Pearson] 1159—ab
complications leukemia [Levy] 537—ab
immunity measuring 1458—E
immunization [Stewart & Platou] *1520
immunization of tuberculous children with Sauer's vaccine [Siegel & Goldberger] *1083
municipal control Evanston, [Sauer] *487
treatment calcium orally [Fillion] 2172—ab
treatment cevitic acid [Ormerod] 1076—ab
treatment x ray 1384
vaccines distribution discontinued 718
WIDMARK TEST See Blood alcohol
WILHARMS Salve 1653—B1
WIND Instruments See Saxophone
WINE alcohol poisoning in breast fed infant from mother [Wyckherheld Bisdorn] 178—ab
drinking and nutrition South Africa 61
serving obligatory in restaurants Hungary 1291
WINKING See Jaw Winking Phenomenon
WINSLOW, FLOYD S See Index to Organization Section
WINTERGREEN Oil of See Methyl Salicylate

WINTROBE Hematocrit See Erythrocytes
WISCONSIN See also Index to Organization Section
Hall of Health 1050 1131—E
WITNESSES See Evidence Medicolegal Abstracts nt end of letter M
WITTON 2005—B1
WOLFFIAN BODY uterine tumors originating in [Limburg] 543—ab
WOMEN in Medicine See Physicians Women
Students Medical women
WOOD D J death 61
WOOD Tick See Ticks
workers cedar poisoning predispose to lung infections? 1744
WOODBURY'S soap skin absorption of vitamins in 509—E
WORD Blindness See Aphasia visual
WORDS AND PHRASES See Terminology
Medicolegal Abstracts at end of letter M
WORK See also Industrial
for cardiac patients 1829
WORKMEN'S COMPENSATION ACTS See also Medicolegal Abstracts nt end of letter M
eye injuries and 894
trauma and Charcot joints 1927
WORKS PROGRESS ADMINISTRATION See Index to Organization Section
WORMS See Intestines parasites
WOUNDS healing nymptomatic scurvy and peptic ulcer [Ingalls] 1489—ab
healing cod liver oil in [Löhr] 1676—ab
infected in hemophilia maggots therapy [Poble & Muddock] *2055
Surgical See Abdomen
treatment crude petroleum for abrasions 1300
treatment pectin 1283—E
WRIST surgery nerve irritation from fibrosis after 64
tumor ganglion 1929
WRITING booked for n fall 785—ab
WTC Anti Pollen Salve 728—B1

X

XANTHOMA inflammation in surgical diseases [Biehl] 1765—ab
tuberosum in tile setter [Sugg & Stetson] *411
XEROPHTHALMIA clinical study [Ayuyao] 1316—ab
XERVAC Crosley 1635
XYLENE industrial hazard [McConnell] *764

Y

YALE University cancer fund given to 51
YAWS See Frambesia
YEAST effect of short or ultrashort wave irradiation on [Werthelm] 1496—ab
effect on liver glycogen in hyperthyroidism [Drill] 1853—ab
Fleischmann's Council report 276
irradiated feeding to cows to produce vitamin D milk Council report 1814
Squibb Yeast Tablets 1127
YELLOW FEVER etiology [Coles] 1763—ab
Noguchi and Young memorial 217
rural virus of 1466
spread of and air traffic 1204—L
urban epidemic [Walcott] 2017—ab
vaccination of aviators 719
YELLOW OB food dye [Chimenko] *493
YERKES White Liniment 1060—B1
YOUNG WILLIAM ALEXANDER memorial 217
YOUTH See Adolescence

Z

ZANNITE 2085—B1
ZINC chloride toxicity of soldering process 895
ionization See Rhinitis Vasomotor
Protamine Zinc Insulin See Diabetes Mellitus Insulin in
Sulfate Spray See Pollomyelitis prevention

AUTHOR INDEX

In this Index are the names of the authors of articles which have appeared in THE JOURNAL, the names of those who have read papers before Societies as published in THE JOURNAL and those whose articles have been abstracted in the Current Medical Literature Department. The * preceding the page reference indicates that the article appeared in full in THE JOURNAL. For subject index see page 2175

- A
- Abbasy M A 1492
Abdulkodir-Lutfi 631
Abell I, 238 *1241
Abels, J C, 989
Abrahamson E M 1402
Abramson H *475
Abshier A B 987
Acuña M 1860
Adelheim R 471
Adler E L *1873
Adler H 916
Adlersberg, L 748
Aglialoro M 470
Agullar H 2024
Al Alcheburg U 1588
Aliso M 829
Albright F 1397
Aldrich C A 1760
Alexander J, 538
Alexander W A 1583
Allen, A W *923
Allen E V *549
Allen K D A 905
Allen P D *121
Allison V D 173
Almour H 908
Alovski A 243
Alpers B J 307
Altschule M D 1938
Almato H J 2024
Amberston J B, Jr *1949
Ambre 1319
Ames A 1672
Amstler C 1240
Anderson C M *1788
Anderson D F 87
Anderson, L E 822
Anderson R S 538
Anderson T 910 1159
Andervont H B 84
Andolf N 998
André C P 1407
Andrés L 749
Andrews F L *431
Antona D 396
Antopol W *1192
Archer H E 1585
Archer V W *264
Archibald J J *1008
Ardashnikov S N 173
Areno J M 741
Arles L J 312
Arling, C D *1092
Armstrong C *410
Armstrong H G *417
Arnett J H 163
Arnold L 1575
Arnott W M 86
Aron E 830
Aron M 1675
Ascher K, 1589
Ashley F 1231
Ashman R 461
Ashenasy H 2107
Ask Upmark E 629
Atkinson A J 461
Atnan A 751 1162
Aub J C *1276
Aubln A 80
Audap Souble P 1943
Auerbach T S 1493
Ault C C *1786
Aykroyd W R 1081 1236
Ayuyao C D 1316
- B
- Baostrup C I 322
Baccorini L 1765
Bochem A, 618
Bachmann G 1579
Badgley C E 78
Boehr G 535
Baer H L 1234
Bagwell J S Jr 1592
Bahls G 630
Bailley A *2136
Bailley K V 1585
Bailley O T 2104
Bailley R J *1419
Baker A B 1073
Baker F 1394
Baker R D *10
Balanesco I V 320
Balcerski M *1983
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Ballenger E G *1037
Boncroft F W 2017
Bankoff, G 832
Bannick E G *1257
Borach A L 622 2018
Borbonente F 1237
Borbera G 1588
Borer A P, 165 1853
Borgen J A 84
Barker L F *785
Barker M H 1852
Barker W H 1485 1487
Barksdale E E 1855
Bornacle C B *111
Barnes A R *1347
Barnes R W *640, *1184
Barnes W A 307
Barnett, C W *1715
Barnett E J *846
Borney D 620
Baron H A 1578
Barowsky H *422
Barr J S *1265
Borron E S G 824
Barsky M H 466
Bartels E C 621
Barton F E *2044
Boscapé A 176
Bassler A *864
Bate, R A 1939
Bateman J F *1092
Batson O V 1562
Battaglia A 832
Bauer, H 93
Bauer J *1442
Bouer W 537 1153
Bouersfeld E H *16
Baumann J 241
Boxter H 1762
Beall L L 1561
Bearse C *1626
Beck C S *1781
Beck F F 2019
Beck M D *566
Becker F 175
Beckermann F 1767
Beckh W 1406
Bedford T H B 1080
Begg N D 87
Bellinfante A J G 398
Bell A C 625
Bell E T 985
Bell J W 536
Belletolle P 89
Beloff H M 1074
Beltrometti L 176 176
Benassi E 831
Bendlen W M 1846
Benedict W L *473
Benjamin J D *1249
Benjamin P V 315
Bennett G A 537
Bennett G E *1120
Bensley E H 309
Bent M J 164
Bentivoglio G C 995
Benzadon J 242
Berens C 237 *777
Bergeret A 830 830
Bergh G S 1078
Berghausen O 1074
Bergmark G 998
Berkhiser E J 313
Bermon L 826
Berman T M 908
Bernay P 1237 1942
Bernhelm A R 523 1853
Bernstein C Jr 2018
Berri H D 749 1238
Bertelsen A 244 1496
Bertola A 1238
Bespaloff M 748
Best R R 1580 1853
Best W H *475
Beumer H 750
Biosini A 469
Biehl M 1765
Bierman W 821 *867
Blige E *328
Binet M E 241
Bing J 1086
Binger W V *1
Binkley R V 467
Bird C E *1626
Bird J D 1077 1672
Black M D 240
Blackford L M *262
- Blockford S D *264
Blocklock J W S 1405
Blackman S S Jr 824
Bloke F G *642
Bloke H 1397
Blalock A 1577
Bland E F, 1308
de Blasí A 242
Bliss E A *1524
Bloch C 751
Bloch L *27 *204
Block M 1850
Bloomberg E 1397
Blumberg K 1409
Blumstein G I 606
Bocage A 628
Boch J 1078
Boch H E, 2108
Bohlman H R *254
Boivin A 628
Boiler R 321 1162
Boman P G *1176
Bonnamour 1319
Bonnard 1237
Bonnevile P 85
Boon W R 1583
Borchard, A 997
Borchardt H 913
Bordo H E 2024
Borgen D R 167
Boros E *113
Borst, J G G 829
Borthwick G R 85
Bosco I 1676
Bowers W F 1078
Bowman P N *18
Boyd E M 744 1317
Boyd J D 2095
Boyer S Jr 1854
Bozlerchich J *570 1315
Braasch W F *1703
Brahdy M B 2006
Bralley M 1852
Bram I 1233
Branch C F *2044
Branch H E 1313
Bronder T 322
Brandt R 396
Branthom S E 312 1234
1235
Breen G E 626
Brehm W 1490
Bretey J 241
Breuhaus H C *191
Briggs J F 393
Briskas S B 1083
Bristol L D *245 1848
Bristow L J 691
Broadhurst J 1759
Brook R C 1318
Brockmann H 1943
Brodaty E 1162
Brodie E L 1938
Brodin P 89
Brody M W 1833
Brookes T P *6
Brookfield R W 1763
Broster L R 166
Broun G O *1027
Browder J 617
Brown A I *1802
Brown A L *268
Brown C E 747
Brown I L 1579
Brown M G *256 743 148.
Brown P W *1328
Brown W A 173
von Brücke H 1322
Brunerie A 748
Brunner O 1162
Brunner W 92
Brunschwig A 1030
Bryan W J Jr *573
Buckley A C 81
Ruey P C *1007
Budelmann G 319
Büngeler W 1321
Bule L A *917
Bulrge R E 2017
Bullowa J G M *1323
*2058 *2061
Bundesen H N *337
Burceva E 243
Burch E P Jr 1403
Burch J C *1864
Burke E M *2121
Burstein L 1313
Botler A M 1397 2099
- Butler H M 1236
Butsch W L *1591
Buttle G A H 626
- C
- Cachera R 2107
Cade A 1237
Cade R 1319
Cadwallader R 150
Coffler P 1239
Cahan J M 535
Cairns H 1856
Calabresi M 1494
Collabon R H *1511
Colloway J L 2018
Cameron D F *1246
Comeron D F 80
Compana C 1084
Campanacci D 395
Campbell E 311
Campbell H B 1849
Campbell J A 624
Campbell M 173
Campbell M F *1606
Campbell S 2104
Campbell W C *1105
Campos R 2108
Cann R J 1318
Cannon A B *348
Cannon P R *1536
Cantorow A 464
Canuyt G 2107
Capps J A *852
Carey W C 389
Carez C 1403
Carlinfant E 319
Carlson L A 312
Caroll J 830
Corpeniter C M *1428
*1430
Corpeniter G 317
Carr C J 2019
Correro J L 170
Correz P 2171
Carrière G 830
Carter C F 1582
Cary M K 168
Cassasa C S B, *1886
Casselman E J *05
Costex M R 694
Cotherwood R 630
Catlin C H 240
Cattell R B 745
Carollo M E *2139
Cecil R L 1153 *1323
1937
Cella G 1494
Chodwick H D 1926
Chamberlain W E 1235
Chamberlin G W 1755
Champy C 912
Chandler F A *1411
Choney L B 236
Chang C C 2171
Chong F C 627
Chang S L 911
Chaplin C A 171
Chapman E M 826
Chopman G H 237
Chazaf E 2017
Chasovnikov P G 632
Chotogon C 89
Chatterji S K 2104
Chaudhuri M N R 1584
Chaudhuri R N 1584
Cheavens T H 1582
Chernayo L A 1085
Chickering H T *1323
Chitnis V K 2104
Choliser R M *1628
Chopre R *2105
Chorine V 912
Choy F 1394
Christensen S 472
Christlaen L 317
Ciantini F 1083
Cicchitto A M 1589
Cicchitto E 1588
Ciccolini P 1943
Cimlnata A 318
Clabr J *19
Clark A R 2100
Clark E 309
Clark J C *1039
Clark C W *1021
Claude H 1237
Clayton C E B 627
- Climenko D R *493
Cobb S 1153
Cobey M C *1120
Codic C F 1405
Cohen A E *115
Cohen, M 70
Cohn, L C 1850
Colby M G 1846
Cole H N *580
Cole R I *2059
Coleman C C 165 *1613
Coles A C 992 1763
Coles B C 310
Collens W S *2125
Collier F A 165 *2130
Collet F J 1082
Collier J L *1959
Collins, D H 1405
Collip J B 462
Colton W A 310
Coltrin G S 1757
Colver, T 1583
Colwell H A 892
Cone W 1851
Connell F C 1311
Connell W F 744
Consolazio W V 392
Consoll D 242
Cook D D M 1316
Cook L C 1492
Coole A M 1081
Cookson H 394
Coolcy T B, 1846
Coombs H I 240
Coon J M *1532
Coope R 1586
Cooper E L 316
Cooper P 1038
Corcoran W J 166
Cordaro G 014
Corell F 1765
Corvin E H L *1323
Cory C W 77
Cosentino G 1943
Coste J H 171
Cotton G 1926
Co Tul *250
Coudard R 912
Counseller V S *1687
Courmont P 2023 2023
Courtville C B, *1184
Cousins S M 391
Cove Smith R 316
Cowen D 1399
Cox L B 540
Cramer A J Jr *101
Cramer W 740
Crawford R R 537
Crebbin J T 2101
Crile G 1397
Crile G, Jr 1307
Crichtles M 171
Crohn B B 160
Cruchet R 2171
Cruz E 2017
Cuilleret P 395
Culmer C U 461
Cummer C L *495
Cummins J A 1061
Cunningham R S 1577
Curcio L 237
Cutting W C 2019 2020
- D
- Dock S *546
Dahl Iversen E 834
Dahms O A *337
Dameshek W *61
Dandy W F 1849
Dorrah W 1758
Das Gupta B M 2105
Das Gupta C R 747
Doridoff L M 1589
Davidovich 916
Davidson J R 2169
Davies J A V 465 *37
Davis C *1363
Davis H A 1313
Davis M F *1631
Davison M 312
De R H 627
Debré R 629
Dechard G M Jr 14 167
DeCourcy J L 618
Defrance M 628
De Francois W *207
Degen J A Jr 742

- Degkwitz R 833
Delannoy E 830
Delannay A 1675
Delbos J 469
Denning D 1940
Dennis C 2017
Denny E R 622
De Orsay R H 103
Deren M D 1157
Dereux J 1493
Derleux G D *10
Derrick E H 627 747 1536
de Savitsch E 390
Devle 2172
Dewling T 626
Dexter R *495
Díaz de León A 1940
Díaz Nielsen J R 1676
Dicker E 994
Dickerson D 1231
Dickey L 905
Dickinson J R 1318
Dickson E C 66 1757
Dietel H 1084 1944
Dieudonné F R 627
Dietz J 176
Dill D B 392 824
Dimock E M 240
Diagamane E 913
Dinsmore R S *179
Dintenfass H 827
Discombe G 1585
Doane J C *578
Dodd E C 1318
Dolsy E A 1312
Dominick DeW *247
Donohue P F 1489
Donovan E J *558
Dorfman R 1 1670 1670
2169
Doub H P *1138
Doubilet H 165
Douglas B H *771 1398
Douglas R C 167
Dowden C W *1197
Dowling E S 902
Dowling H F 2020
Dowling J G 391
Drake T G H 1760
Drave C E 461
Dreyfus J R 241 1085
Dreyfus le Foyer 541
Dreyfuss M 2107
Drill V A 1593
Drooker J C *1180
Dublineau J 1237
Dugan A R H 2106
Dugan J N 2104
Dugan W F *1304
Dulaney A D 2098
Duncan G A 309
Dunlop D M 394
Duplant 1310
Dupont A 1237
Dyke C G 1575
Dyleniewicz H A *200
Dyrenfortb L A 1851
- E
Eagle H 536
Eagles G H 1585
Eagleton W P 823
Eason J 317
Eaton J C 316
Ebaugh F G *111 *1249
Eblich E M 544
Edelen C M 907
Edington J W 1857
Edisbury J R 1406
Edmunds C W 1670
Edwards H T 392 824
Eger W 2025
Eggermann A 541
Ehrenpreis E 178
Ehrstrom C 752
Elchner E 2102
Elman J E *1698
Elder O F *1037
Ellaser M Jr 740
Ellason E L *848
Ellery R S 2106
Ellinger P 1406
Ellis M D *1718
Ellis W *1718
Ellison E T *1860
Ellman P 468
Elson K O 1755
Elvehjem C A 989
Elvov E 1581
Elward J F 1155
Emerson K Jr 2019 2020
Engelbreth Holm J 472
Epstein E 78 *127
Epstein I M 462
Erhard P S 167
Erkelens A D 1678
Erner M S *919
Ervin C E *1966
Ersersen T 2026
Erans H 907
Erans P 1583
Erans P B 1583
- Ewnlt J R *111
Eyerly J B *191
Ezrlchson W J *1706
- F
Facey R V 394
Fajerman H 244
Falcetti E 396
Falls L S 617
Falls F H 84
Fantus B 84 *128 *200
Farrand B C *253
Farrington C L 1758
Fasting G 1581
Fatzner H 541 1083
Faulkner J M 535
Faure G 1942
Fauvert R 2107
Fehr A 1766
Fell H *1781
Felslirer O *561
Feldman H *1119
Feldman J B *1706
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Feller A E *1712
Felslin G *1863 (correc
tion) 1997
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Fenz E 751 1162
Ferguson L K 2017
Ferracini R S 242
Ferranini A 1238
Ferrell J A *835
Festen H 1408
Fetter F 2017
Fetterman J L 1068
Fienberg R 744
Flessinger N 830
Flitator A N 1410
Fillon H 2172
Fline J 391
Fline M 904
Finlefs L A 1082
Finkelman I *344
Finlayson M H 88
Finney J O *1982
Finocchetto R 2024
di Flore H 832
Fishbein V *1539
Fishbein W 1 *337
Fisher A G T 1585
Fitch C P 2108
Fittipaldi C 1084
Fitzgerald J E 1938
Fivoli C 914
Flagg P J 1216
Flaks J 1407
Flaum G *343
Fleckseder R 2025
Fleischhacker H 321
Flesch J 1085
Florand J 89
Fobder V 1493
Foerster H A 990
Foley F E B 991
Folsom A I 621
Fontaine R 175
Forconi A 395
Ford F R *785
Forfota E 996
Forrester J S 1755
Forsbeck F C 165
Foshay L 743
Foster G E 626
Foster P D 987
Fourestier M 913 1587
Fowler A F 309
Fowler W M 165 1853
Fox H (Cleveland) *1813
Fox H (New York) *1978
Fox M 1487
Franklin W Z 464
Franchini L 91
Francis T Jr *566
Francis E 1767
Frank S 2110
Frank L J *1011
Frank R T *1121 *1863
(correction) 1977
Frank T J F 88
Frankenthal L E Jr 1155
Franks R M 1076
Frant S *475
Fraser D T 2019
Fraser F R 1080
Fraser W M 1491
Frazier W D 389 623
Freedlander S O 538
Freedman E 821
Freeman J T 825
Frederksen E 1677
Freudenberg R 93
Freyberg R H 1670
Fried B N 1847
Friedenwald J 2102
Friedewald W F 2101
Friedman A B 903
Friedmann Dahl J 1944
Frish C 177 2109
Frühlich A 93
Frühlich C 544
Froment R 89 1764
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Fürth O 1677
Fuller M K 1316
Fullerton H W 171
Fuml C 995
Funk C 2086
Furber R I 2106
Furth J 307
- G
Gachtgens G 470
Gagliardi P 1859
Gaines A R 2168
Gajdos A 830
Galeotti Flori A 318
Gallagher T F 1670 1670
Gallavan M 1075
Galloway I A 993
Galloway J 910
Gammom G D *413
Garbe W 987
Gardère H 2023 2023
Garin C 1237
Garland H G 2105
Garraud R 1083
Gaté J 395 469
Gatliff H 91
Gay F P 2100
Gelger J C 466 *1363
Gelling E M K *1532
Gellersiedt N 998
Gelman S 1314
Gegner V 2110
Gerard R W 1397
Gerstel G 1861
Geschlechter C F *1894
Gesse E P 631
Ghormley R K *2111
Gibbons R J 464
Gilbert P 89
Gilbert J T 1158
Gilbert R 522
Gildea E F 989
Gillen J B 2170
Gilles E C *484
Ginestous E 2171
Ginsberg J E 2018
Ginsburg H M 619
Glorio G 542
Giordano A 2024
Girard M 2172
Gjessing H G A 1487
Gladstone R J 092
Glanzmann E 1408 1859
Glaser M A 742
Glass V 1491
Glendy M M 985
Glendy R E *863 985
*1775
Glenn F 623
Glover B T J 1491
Göpfert A 1943
Gold H *481
Goldberg J A *777
Goldberger E W *1088
2095
Goldberger M A *1863
(correction) 1997
Golden R *1497
Golden S E 2105
Goldie W 2035
Goldman J L *1254
Goldstein J D *2057
Golston H 1582
Gómez J B 1765
Goodman L 809
Goodman M H *1009
Goodman S *1930
Gordon L S *570
Gorlero Pizarro R 1161
Goss C C 622
Gosse A H 171
Gould S E *1973
Grady H S *253 61 B
Graffar M 90
Graham A S 539
Graham S 909
Grand M J H 537
Grant R L 1670
Grant W H 164
Grasset E 1857
Gravler 1237
Gray H J 1577
Gray J D A 85
Gray L A *1597
Gray M E 1577
Green R *1903
Greenberg L D 1394
Greene J A *1712
Greene J S *187
Greenfield J G 2104
Greenhouse B 2099
Greenspan F B 535
Greenwood D A 1157
Gregg R O *1257
Greulich W W 2169
Grigaut A 89
Grill C 94
Groag I 93
Groesman W A 1382
Gross L 307 1847
Groesman J 748
- Grove O A 1580
Guarinal F 749
Guarinal C 749
Guhner R 238
Guernsey C M *1257 1485
Guild H G *1597
Gunn A L 1941
Gunn D L 1941
Gunsett 2107
Gunther A 1231
Gustafson P *803
Guthrie K J 1405
Gutman A B 235
Gutschmidt J 471
Gutzelt K 543
- H
Haas L 243
Hadjopoulos L G 536
Hader A J *1629
Hadley P B 389
von Haebler T 1082
Hafkesbringe E M 82 461
Hafner F 389
Hagebusch O E *1537
Hagedoorn A C 2026
Hagedoorn A L 2026
Hageman P O *642
Hagemann P H 243
Haldi J 1579
Hall A J 172
Hall A S 468
Hall G E 310
Hall M C 746
Hall R 1608
Hall W E B *125 2021
Halliday N 907
Halpern K C 2019
Halpern L 93
Hamblen E C *10
Hames F 2097
Hamill B M 1846
Hamilton A S 1758
Hamilton J B 1669
Hammond G 988
Hammond W T *407
Hampton A O *1265 2096
Hamrahan E M Jr *1170
Hansen L 2110
Hansen S 322
Hanzlik P J 1756
Hardgrove M 1487
Harkins H N 619 *1501
Harley D 315
Harmon P H 1061
Harris F I *1900
Harris J H 905
Harris L J 1492 1492
Harrison R W 81
Hart D 170
Hart E B 989
Hartfall S J 2105
Hartman F W *2116
Hartung E F 606 2099
Hartwell S W *1800
Harvey A M *12 1488
Hass G M 2104
Hasselbach F 1588
Hautefeuille E 541
Hawke W A 825
Hayashi N 829
Hayden E P 826
Hayhurst E R *1802
Hayman J M Jr *1813
Hayman M 1333
Hazel O G *1275
Hazen H H *425
Hecht A F 2026
Hector (Vime) 89
Helfetz C J 2097
Helm J W *417
Hefman M 1081
Hendel R H 1295
Heintzelman J H L 389
Hesse F H 1311
Heltz Boyer M 912
Hejman V 1858
Heller E L 1654
Helmuth G 2167
Heller H 543
Helmlich C A 166
Helmholz H J *1039
Hench P S 1481
Henderson P 909
Henderson J 1561
Hennig O 831
Henry S A 1667
Henschen C 175
Hensel G 1860
Heyler A B *1602
Herbert F K 1941
Herbst W P 1818
Herfort K 1764
Herman H J *208
Herman W 1075
Herrald F J C 1845
Herrall W L 2103
Herrmann G 167 907
Herrmann L G 1672
Herschberger C *1251
Hertel F 1766
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Hess J H 1759
Hesseltine H C *768
Hetherington H W *1952
Heuer C J 389
Heyd C G 83
Heymann W 83
Hicken A F 1855
Hickling R A 1406
Higgins G A 235
Higginbotham N L 2167
Hildebrandt A 1321
Hill M R *1181
Hill N G 1442
Hilton J P 80
Himmel I 1407
Hirata Y 990
Hirose R S 310
Hirsch E F *937
Hirtz C 1942
Hydya K 829
Hicrild N 2110
Ho W Y H 1232
Hoagland H 2096
Hector E F *1786
Hodgson J C 88
den Hoed D 1322
Hoff H 244 2109
Hoffman S J *1447
Hoffmann H 164
Hoffmann A 1861
Hogan G F 169
Hogan H 2098
Holbüll S A 472
Holck H G O *1517
Holcomb R C 972 1742
Hollander L *95
Holloway G D 164
Holmblad E C *1196
Holzbach E 1085
Hoover P A *266
Horowitz E A 821
Hoshins R G *1246
Houser G F 1312
Houser K M 1577
Howard T 1654
Hsieh C H 822
Hsu S C 911
Hubbard A W 1609
Hubbard W B 1231
Huber J 89
Hubert G 1669
Hubert L 1671
Huddleson I F *1971
Hudkins A P 1233
Hughes E 810
Hughes W H 1674
Hull E 82
Humphreys E M *400
Hungerland H 2108
Hunt H F 1702 *1060
Hunt R C *1110
Hurlez C 830
Hurblut J L 2157
Hurst A *430
Hurst E W 624
Hurizado A 824
Hurwitz N 1561 2000
Hurwitz S *2042
Hurynowiczówna J 94
Husband M W *1707
Hutton J F *1618
Hutton J G 823
- I
Infantozzi J 470
Ingalls T H 1489
Iob L J 2018
Irnola J 470
Irsigler J J 542
Isaac R 1937
Isaac S L *574
Iv) A C 461
- J
Jablons B 522
Jackson A S 1079
Jackson C 294
Jackson C L *108 291
Jackson F *841
Jackson H 1231
Jackson S H 1760
Jacob I F 1674
Jacobs A 86
Jacobs W 1074
Jacobsen A W *101
Jacoby I 116
Jacquet A 397
Jaffe H L *516
Jaincl F 177 1766
Jameson I C 1937
Jammot M L 628 2023
Janewicz A *12
Janusik H 394
Jarmen W D 745
Jarvis J A 1761
Jeghers H *706 (correc
tion) 965
Jenkins I M 1911
Jennings G H 2170

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 Jephcott C M 1488
 Jersild V 1862
 Jervils G A 2098
 Jeter H 2021
 Jeune M 89
 Johansen C, 322 834
 Johansen G F 244
 Johnson C D *1869
 Johnson C M 303
 Johnson D W 747
 Johnson E 1400
 Johnson F S 2103
 Johnson H L 538
 Johnson K S 2103
 Johnson R P 2168
 Johnson W R *1800
 Johnston C 1761
 Johnston C G 536
 Johnston C H *1359
 Johnston F D, 1082
 Johnston J A 741
 Johnston W V 2100
 Jolliffe N 1075
 Jolly E 1759
 Jones C P 824
 Jones F G 1852
 Jones G *1027
 Jones O 315
 Jones T D 1308 1308
 Jones W A 825
 Jordan A C 2022
 Jordan E P *1444
 Jordan W R 1079
 Joslin E P *497
 Jullanelle L A 81
 Jungeblut C W 1758
 Junghanns H 832
 Junghans E 92

K
 Kammerer H 1321
 Kahn J R 1755
 Kahn R *1802
 Kalz F 1162
 Kammer A G *1511
 Kandel E V 2168
 Kanter A E *1097
 Kantrow A H 2095
 Kaplan I I 1755
 Karády S 996
 Kasabach H H 235
 Kasman L P 619
 Kasteln G W 1862
 Kaunitz H 1767
 Kautz F G 78
 Ke C T 911
 Keefer C S 164 *325
 *1448
 Kell H 540
 Keith H M, 2169
 Keith J D 1585
 Keith N M *1
 Kellar R J 86
 Kellner H 1677
 Kelly L C 1307
 Kelser R A 308
 Kemkes B 996
 Kemp A E 1856
 Kempf C A 1157
 Kempski H 243
 Kendall H O *1120
 Kendall H W 1576 2020
 Kennedy A S 79
 Kennedy F S 1578
 Kennedy W T 1846
 Kenny M 1082
 Kent H 1767
 Kenyon A T 1670 1670
 Ker F L 172
 Kereszturi C 740
 Kernan J D 2018
 Kerpel Fronius E 750
 Kesten H D *1509
 Kldd J G 744
 Klefer E D *1341
 Killian H 1495
 Klmm H T 822
 King H C 83
 Kirch A 544
 Kirkin B R *633
 Kirwan E O 1584
 Klismeyer M 241
 Klsthinos N 1160
 Klein J E 390
 Kleitman N 164
 Kilmke W 1494
 Kline E M *328
 Klinefelter E W *1798
 Kllng D H 904
 Kllr C 469
 Knack A V 1085
 Knacke 1676
 Knapp A 1937
 Knauer H 914
 Knepper P A *1591
 Knepper R 2025
 Kobak A J 1155
 Koch C A 310
 Koch E K 472
 Koch F C 1312 1670 1670
 Koch S L 169

 Kocour E J 1397
 Köhler A 177
 Koenen H P J 178
 Königsberg M S 396
 Koepf S W 1576
 Körbler J 471
 Köhler G O 989
 Kohn L A *2061
 Kohn S E *1005
 Kolmer J A 237 522 1156
 Koopmann H 243
 Kopp I 1850
 Korb M 466 1854
 Korthof G 1678
 Kosse J *204
 Koster H 619
 Koster L 1086
 Kortumovich G P 1085
 Krakauer S A 537
 Kral F 833
 Kramer P H 632
 Krantz J C Jr 2019
 Krauel G 1677
 Kraus G 1240
 Kraus W M 236
 Krauspe C 321
 Kravetz B *1880
 Krebs E 994
 Kreider H R *1532
 Kretschmer H L *1097
 Krishnan B G 1081
 Krogh M 1590
 Kruse F H *868
 Kuchlin W 543
 Kümmerling 630
 Kuhns J G *1108
 Kulehar G V 822 *1715
 Kunath C A *183
 Kunstadter R H 1759
 von Kup J 2025
 Kurtz A D 1654
 Kutschera von Alchbergen H 396

L
 Labate J S 1316
 Lachman G S 904
 Lafferty R H 467 1402
 Lahey F H *1414
 Lake N C 992
 Lamm H 1834
 Landau A 1858
 Landfisch S 834
 Landis E M *2030
 de Langen C D 398
 Langworthy O R 237 1761
 Laporte A 748
 Laqueur E 913
 Larcher W 398
 Larkin E H 85
 Lassen H C A 472 2110
 Lauber H J 543
 Laubry C 175
 Laurinsich A 1860
 Law J L 77
 Leary T 1382
 Lebalily C 1942
 Leberman P R *1698
 Lee L E Jr 824
 Lehman J F 1756
 Lemaire A 89
 Lemere F 1401
 Lemere H B *347
 Lemierre A 748
 Lencel E 995
 Lennette E H 1381
 Lenz E 92
 Leonard M 985
 Lerche R 748
 Lerman J 1668
 LeRoy G V 2168
 Levin O L 1939
 Levine S A 1074 *1775
 Levisman P 1161
 Levrat V 1319
 Levy C S *1009
 Levy L F 1319
 Levy W 537
 Lewin W 1857
 Lewis A 910
 Lewis D *1894
 Lewis L G 1761
 Lewis R M *1873
 Lewy R B 1232
 Llan C 1587 1587
 Liberman T N 1764
 Lieb C W 237
 Liebenam L 1496
 Lieberman A 535
 Liebesny P 630
 Lligas A 2107
 Lignac G O E 998
 Lillie R D 1077 1234
 de Lillo G 90
 Lilly G 1854
 Limburg H 543
 Lindgren S 998
 Lindqvist T 1861
 Lindsay H C L *1530
 Lippard V W 903
 Liston O 466
 Littauer D *649

 Little J M 1579
 Litzenberg J C *1871
 Liu K 911
 Livermore G R *1528
 Livieratos S 1160
 Löhr W 1676
 Loeper M 89 912
 Loeschke H H 1161
 Loewe Lyon (Mme) 89
 Löwenstein W 472
 Lolc R 1493
 London I M 523 1853
 Long C F *23
 Long P H *1524
 Lorenz E 84
 Lorenzo R 2108
 Lovern J A 1406
 Loy D T *1797
 Ludlum W D 1142
 Lundsteen E 834
 Lust F J 1307
 Lynch K M *1974
 Lynn F S 1403
 Lyons R H 2095

M
 McBryde A 467 2100
 McBurney R 1157
 McCaffrey I 78
 McCandless W K 150
 McCann W S *2056
 MacCarty C C 1667
 McCastor J T N *1799
 McCastor M C *1799
 McClellan G S *1869
 McCloskey K L *250
 McClure R D *782
 MacComb W S 1402
 McConnell A A 1856
 McConnell W J *762
 McDonald C A 466 1854
 McDonald H P *1037
 McDonald S 910
 McDonough K B 167
 McDougall J B 911
 McGeorge M 1080
 McGibbon J E G 626
 McGowan J M *1591
 McGregor A R 1583
 McGregor H G 468 1855
 McHenry E W 173
 McIlroy A L 86
 McIntosh J 1491
 Mackay C 1584
 MacKay E M 1669
 Mackay H M M 1674
 McKendle C H 164
 McKeown H J 84
 McKhann C F *2034
 Macklin C 1470
 McLagan N F 1857
 McLaughlin A I G 1857
 MacLean A R *549
 McLean J 1579
 MacLean M E 1759
 McLester J S *838
 MacMahon H E 1847
 McManamy M C 1312
 McMaster P D 744
 MacMillan J A 1851
 MacMillan R L *1194
 MacNeal W J *2139
 Macy I G 1846
 Maddock S *2055
 Maddock W G *2130
 Maes U 617
 Maggio P 1675
 Magill T P *566
 Mahlo A 915
 Mahoney J F *425
 Maler R L 1399
 Maillard G 2023
 di Malo G 176
 Makel H P 990
 Malamos B 629
 Malamud T 995
 Maliphant R G 829
 Mallwa E 1590
 Man E B 989
 Mandel E 915
 Mandl F 243
 Manizade M D 2109
 Mann F C 1311
 Mann W N 172
 Manning R J 827
 Maragllano V 833
 Marberg C M *1965
 Marchoux E 912
 Marcle D V *1328
 Margottini M 832
 Mariani G 1238
 Marie J 628
 Markes S 915
 Marmor J *430
 Maroney J W 741
 Marshall E K Jr 1314
 2019 2020
 Marshall S F *1341
 Martenson L 1672
 Martin C L 2097
 Martin G S 824
 Martin G J 465 1311

 Martin L 2167
 Martin R 1675
 Martin W B 1491
 Martinetti R 395
 Martinez D B *489
 Marzocca C *1765
 Marzollo E 1765
 Mascall W N 540
 Masek J L 469
 Masquin P 1237
 Massia G 469
 Massie E 2095
 Master A M *546 2157
 Mathé C P 1848
 Mather J H 626
 Mathiesen H 2110
 Matthew G D 86
 de Mattia R 913
 Matlick W L *2121
 Matz P B 1233
 Mayer H 915
 Mayer L L *1793
 Mayerson H S 1847
 Mayfield F H *928
 Mayoral A 83
 Mazzell E S 994
 Mazzetti M 1675
 Mazzini F 629
 Means J H 1668
 Medlar E M 1073
 Meier E J 1766
 Melchlor E 1764
 Meleney F L 150
 Meleney H E 77
 Meller J 03
 Mellon R R 389
 Melnick P J 618
 Mencher W H *1338
 Mengle H A 166
 Menniti I 1494
 Menville J G *1008
 Mercier P 628
 Merrilles C R 1492
 Mertz H O 1400
 Mettler S R 307
 Metzger F C 1076
 Meulengracht E 2025
 Meyer A 1492
 Meyer H W 1851
 Meyer O 543
 Meyers R 617
 Meyler L 1768
 de Michels V 995
 Mielke H 630
 Migliori V 90
 von Mikulicz Radecki F 321
 Mililla A 1237
 Miles A A 1082
 Milhaud M 1237
 Miller, A H 809
 Miller D K 1314 1487
 Miller E P *1903
 Miller J F 746
 Miller S G 1755
 Milles G 1074
 Millett J 1940 *2138
 Millischer P 2172
 Minkenhof J E 1590
 Minski L 2170
 Mintz M E 821
 Mishulov L 392
 Mitchell C L 537
 Mitchell R S *1956
 Mixer W J 391 *1265
 Mizoguchi K 1941
 Möller Christensen E 1678
 Moersch F P 1578
 Mohr H 544
 Mollat P 748
 Momigliano E 1859
 Montaglini L 831 1588
 Montant R 541
 Montanus W P 1672
 Montgomery H 743
 Montgomery T L 163 744
 Mooney V *866
 Moor H D 1579
 Moore C *637
 Moore C H *859
 Moore R L *25
 Moore S W 623
 Morin M 748
 Morris M C 81
 Morris N 909
 Morrison L M *108
 Morse R T 465
 Mortensen V 544
 Morton D J *1112
 Morton R A 1406
 Moscheowitz E *1362
 Moss J M 1852
 Most H 1075
 Mosto D 542
 Motley H L *1718
 Mourier P 1768
 Mourund W H Jr 2097
 Mowry I 392
 Mueller B 750
 Müller R 1495
 Müller R W 320
 Muff E 831
 Mullins V G *1509
 Munch Petersen C J 1410

 Munch W 322
 Mundorf H 1839
 Munst L 749
 Murano G 1320
 Muret M 1407
 de Muro P 1320
 Murphy G E 1080
 Murphy H L 624
 Murray W S 903
 Musser J H *323
 Mutch J R 314
 Muth M L 2167
 Myers D, *919
 Myers G B *1983
 Myerson A 239

N
 Nagell H, 630 1162
 Nammack C H *330
 Napier L E 1584
 Narat J K, *655
 Nazareth O de S 629
 Neal J B, 1490
 Neame H 624
 Nedieles H *204
 Needles W 1759
 Nègre L 241
 Negri C, 90
 Negro G 1084
 Neidhardt K 096
 Nelson C H *1027
 Nelson I A *1537
 Nelson J 464
 Nelson V E 1157
 Nettelroth A, 1295
 Netter H 2023
 Neuber E 1240
 New G B 1672
 Newburgh L H 2100
 Newhart H *839 *1620
 Newman B A *1036
 Newns G H 1159
 Nguyen Dinh Hoang 628
 Nickerson D A 743
 Nicodemus R E 1762
 Nicolas J 395
 Nicolas N W 1764
 Niemeler O W 1851
 Nissen N 1 1240 1322
 Nitschke P H 170
 Nobécourt P 1083
 Noble R L 1318
 Noel R 317
 Noethling W 630 1162
 Nonland R *564 1767
 North J P *848
 Notes E *1628
 Novak J 398
 Norick J N 621
 Nyc R N 391
 Nyfeldt A 834
 Nylin G *1333

O
 Ober F R *554
 O'Brien G T 2170
 O'Brien H A 621
 O'Callaghan W P 1081
 Ochsen A 1854
 O'Connell J E A 1080
 Oerlu S 820
 Oertling H 393
 Ohligsmacher H 1044
 Okels H 1590
 Olch I Y 903
 O'Leary P A *1163
 Oomen H A P C 1086
 Oppenheimer A 239 1067
 Orgaz J 306
 Ormerod F C 1856
 Ormerod M J 1076
 Orr H 992
 Osgood E E *033
 O'Sullivan J 316
 Overholt R H *127 1038

P
 Pabst A M 1234 1235
 Pachman D J 538
 Padgett E C 618
 Page I H 389
 Page W 1492
 Palsseau G 2171
 von Pallos K 397
 Paltrinieri G 310
 Panetton P 1587
 Paolillo A 2017
 Papez J W 1668
 Pappenhelmer A M 1671
 Parf W H *1681 (correction) 1997
 Parker H L 1404
 Parker W R *1262
 Parlato S J 1570
 Parnat T *205 *425 1-76
 Parsons C G 1404
 Parsons E H *18
 Parsons R P 85
 Passmore R 1492
 Patcy D H 314

Paton J P J 316
Patterson J 468 1673
Patterson R L Jr 1758
Patterson W B 1762
Paul W D *1712
Pautitt J E *1123
Paulson M *1880
Payne R L *1436
Pearson C C 167
Pearson G E G 80
Pearson R S B 317
Pearson W J 1159
Pedon O D 171
Pedersen S *2130
Pehu M 317
Peller S 1486
Penatt F 913
Pendergrass E P *634
Penfold H B 174
Penfold W J 911 1236
Perazzo G 469
Perdue J J 1308
Peretra S 175
Perkin H J 621
Perles S 912
Perlow S *27
Perschl A 320
Pescarmona M 1408
Pesme P 1942
Peterson D H 1670 1670
Peterson J B *1532
Petrescu Coman V 397
Petri A 1322
Peyton W T 1073
Pfaffenberg R 630
Pfahler G E 312
Phemister D B *1501
Piffner I A 1938
Phillips C C 467 1402
Phillips G 1318
Phillips S W 1232
Phlasecka Zeyland E 1858
Pihlhard O C *2048
Pielles W N 1080
Pijloan M 909 1845
Plicher C 538
Plicher R 1317
Pitcz A 244
Pilgerstorfer W 321
Pimental A M 91
Pinclil L 831
Pinner M 78
Pinosch H 994
Pirroll M 1238
Platow E S *1520
Playfair P 625
Plum P 1086 1768
Plummer D E *18
Pötlz O 244
Polhc F J *2055
Polx G 395
Polak M 542
Pollitzer G 1765
Poltock G A *2111
Pomerantz L *1509
Poegratz R 320
Pons J A 1671
Poole M W 1846
Pope A S 79
Popovici Lupa 397
Popper H 915
Porcos O 320
Porinoy W 2108
Pottenger F M Jr 906
Pottenger J F 906
Potter E L *337
Potter M F 747
Pratt J P *1875
Priestley J G 1081
Priestley J T *1703
Pritchard B 2104
Proppe A 471
Prosperl M H *1448
Pruvost P 1808
Puech P 994
Puglisi V 2172
Puttlinger E J 1856
von Purjesz B 1589
Putoam T J 391
Pytel A 631

Q

Quaglia F 1408
Quenu J 1808
Quick A J 66
Quikley J P *1363
Quilt L W *854
Quimby E H 1402
Quolohy W C 1939
Quilalan J F 809 2006 2086

R

Raagaard O 178
Rabinowitch I M 309
Radford W 390
Radnaat P 751
Rafsky H A *2048
Ralli E P *343
Ramon G 628
Raodati A 463 *1698
Radall L M 2103

Rane L 82
Rankin F W *1719
Ransom H K 988
Raptin O J 1407
Rasch G 472
Raskin N 311
Raso M 2024
Rardin I S 536 623
Ravetta M 1238
Ravitch M M *1122
Raynaud R 1082
von Razgna A 1861
Rea C *266
Read C F *654
Reader D 240
Rebattu 1237
Rector J M 311
Redell G 2026
Reed R E 1654
Reedman E J 988
Rees C E *886
Reese A B 462
Reh T 628
Reichenmiller H 1085
Reichte H S 1075
Reid D E 821
Reid H 1586
Reid R 2022
Reitlj J 748
Reinecke B 176
Reiner M 165
Reiter P J 1862
Reitmann G 176
Reitstaf F 1409
Reuter F A 238
Rhoads C P 1314
Rhoads J E *1684
Ricard 2172
Rice J L *475
Richardson A P 1756
Richardsoo H F 310
Riche C 2023
Richou R 628
Richter A B 1926
Richter H 823
Rickard E R *566
Ridpath R F *545
Ries E 1756
Rigoni M 995
Rinderknecht H 1318
Rinehart J F 1394
Rinkel H J 1489
Riscman J E F *256 743
Ritchie W P 2017
Ritro M 239 *1101
Rivers A B 312 903
Riviere M 1160
Rivoller P 2023
Robbins C *1192
Robechi E 318 318
Roberts C P *1629
Roberts E 167
Roberts J *1027
Robinson C S 1577
Robinson G W 990
Robinson G W Jr 1760
Robinson H B G 236
Robinson L J 168
Rocchini G 1494 1942
Roche C F 1308
Rodway H E 86
Roegtholt M N 398
Rogers B C 1577
Rogers J B *928
Rogers J F *842
Romano J 2096
Rombouts J M 1240
Roome N W 619
Roos C J 632
Rosahn P D 1294
Rosedate R S 1576
Rosenak S 631
Rosenberg H A 740
Rosenberg L C 311
Rosenberg Schaus W 541
Rosenblatt V B 1849
Rosenbluth M B 1850
Rosenthal S M 312
Rothe G 320
Rothermich N O *1027
Rottmann A 752
Roubler C 1160 1319
Rousset J 395
Rovenshine E A 1313
Rowe O W 1401
Rowe S N 307
Roy L 89
Rubin V A 2096
Rubinstein J 91
Rucker P *1087
Rudolph L 170
Ruffin J M *2054
Rule V M 237 1156
Rupprecht H A *1537
Rusk G 307
Russell D S 1673
Ryan H A 1308
Ryan W J 1073
Rymer C A *1249
Ryss S M 1410
Rytz F 235

S

Sachs W 1486
Sacks H A 619
Sacon J I 470
Salm H 833
Salmon U J *1863, (correction) 194
Salvat A A 1239
Salvtn M *1038
Sampson J J 740
Samuel A 910
Sanders J 2026
Sanford A H *425
Sanford H N 926
Sannicandro G 629 1160
Santero N 913
Sarrouy C 1082
Sattler A 2025
Sauer L *487
Sauerbruch F 1676
Saunders G M 308
Saurino J 1759
Seadding J G 2170
Schaffer H W 825
Selma L A *1506
Schedter O 914
Schete H *413
Schelinker I 916
Scherago M 1759
Schitt E 1860
Schindler R 1940
Schlapobersky L 1320
Schlesinger M 993
Schleyer E 321
Schliefpake E 834
Schittke H 996
Schlosser J 1767
Schultz F W *1959
Schmidt W 731
Schmidt W M 903
Schmter A A *28
Schmabel T G 2017
Schneider B *115
Schneider G H 997
Schneider M *1447
Schmetz H 177
Scholker M A 1074
Schnorr E 322
Schoeffel E W *1532
Scholl R 1677
Schonberg I L *1035
Schretzenmayr A 996
Schliff M *250
Schroeder H 2109
Schube P G 239 311
Schüttner W A P 632
Schulte H 1767
Schulhof M G 1079
Schultz L W *1032
Schulz E 915
Schulze M 1074
Schumacher I C 1757
Schwab R S *1956
Schwarz G A 620
Schweitzer M D 825
Schwenker F F 1314
Scopp J 2024
Scott A C 828
Scott F H 1485
Scott W W 745 *1430
Scott L 1405
Scult R H 1757
Sebastianelli A 1161
Seed L 84 1074
Seggal A A 1409
Sela V 2105 2170
Selbte F R 1491
Selby C D *1167
Seligman B 908
Seligson A 1768
Seltner E 308
Sellers T F 1486
Semansky E J 1073
Semb C 1855
Senear F E *425
Seoane W 176
Serafin J Jr 2017
Settel N 1233
Seyfried H 321
Seymour W R Jr 463
Shaftroff B G P 1158
Shamov N N 1318
Shapiro A 619
Shapiro D A *937
Shapiro L B *344
Sharlit H *1036
Shuchan D 2022
Sheldon J M 2100
Sherrill J W 1669
Shimidzu K 91
Shipley A M *1017
Shivers C H det 1580
Shipler L B *575
Shultz S M *273
Shurtz B R *2027
Shwarzman G 535
Siedentopf H 471
Siegel M *1083
Slemens H W 92 1589

Silgerist H E 1834
Silverman D N *1024
Silverman G 307
Silvers S H 1939
Simcont C 242
Simmons E 904
Simmons H T 2022
Simon H T 1758
Simons D J 1400
Simons R D G P 04 1589
Simpson C A 87
Simpson J W *1869
Simpson W M *425 1576
Singer E 226
Singer G 1677
Singer R 752
Skinner E H 1940 *1963
Slack A 319
Stepyan A H 536
Stye M 1940
Smith B C 1073
Smith C *262
Smith C C W 472
Smith D S *1192
Smith D T *2054 2080
Smith E C 1760
Smith F M *646
Smith F R 1847
Smith G S 910
Smith H L *2038
Smith J 2106
Smith K S 468
Smith L B 84
Smith M I 1077
Smith R G 1670
Smith S (Dartford) 626
Smith S (Edinburgh) 2104
Smith S G *2054
Snodgrass W R 1159
de Snoo K 397
Snow W *1886
Snow W B *1275
Snyder R G 1307
Soffer I J 164
Solis Cohen L *578
Solomon C I 2169
Solomon H C 1850
Solomon W M 1755
Solovov P D 632
Sommer G 542
Soper H W 294
Sosnyahor N G 1678
Soulié P 175
Southwell Sander G 2170
Spaeth E B *1889
Spangenberg J J 91 749
Spekler L 2100
Spies T D 1406
Spicsman I G 1573
Spink W W 164 *325
Spitta O 176
Spitz H 320
Spotoff J 1162
Sprafic H 1239
Sprecher 1237
Sprunt T P *1945
Spurling R G *928
Stahler E V 1845
Stanishy W J *273
Stanley Brown M 2017
Starup U 834
Stearns D B *1101
Stearns G 620
Stecher H W 1230 1755
Steggmann A T 1312
Steff J 1239
Stein Brocker O 606
Steiner P E 2167
Stender A 1589
Stengel F 93
Stephens D J 741
Stephenson C S 1486
Stephenson D 626
Stepp W 1860
Stern F L *346
Stern E S 747 1763
Stetson D D *414
Stewart C A *1520
Stewart C P 2104
Stewart J S 1578
Stocker A A 392
Stocklin H 1675
Stoesser V 1400
Stohlman E F 1077
Stokes J H 2018
Stolte J B 1086
Stone H B *1679
Stone W W *1903
Strachan G I 1584
Stratth C L *940
Stransky E 916
Strauss H W 461
Strauss F B 1317
Strauss H 396
Strauss I 1075
Stroganov V 916
Stroud V D *1808
Stubbe Teglbjerg E 1322
Stubbe Teglbjerg H P 1322
Stueck G H *343

Stumme E H 392
Stump J P 1396
Suckte J E *203
Süsskind B 631
Sugg E S *414
Suglura K 1579
Sulkowitch H W 620
Sulzberger W D 987 1205
Summerfeldt P 1760
Sunkes E J 1486
Surc B 825
Sutherland C G *2111
Suzuki K 996
Swalm W 1
Swanton C 394
Swany H C 390
Sweeney M M 1847
Swift E *2038
Sylla A 320
Szeceklk E 752

T

Takeda K 1941
Talbot J H 392
Talla F 1408
Tallis A B *195
Tarachow S 1075
Tarbell H A 1816
Tarnogradsky V 544
Taylor F H L 530
Taylor F W *267
Taylor J 626
Taylor S 174
Teel H M 821
Teleman I 748
Telinde R W 828
Templeton F 1940
Tenebaum A S 1410
Tcnopyr J 1158
Terazawa N 1941
Tercell A W *1684
Teunissen P H 998
Tibile G H *1271
Thieme E T 163
Thomas C B *1170
Thomas W L *1875
Thompson B C 2105
Thompson H E 1482
Thompson J E *938
Thompson W P 235
Thomson A P 910
Thier A M *330
Thimertman H J *1616
Thimertman W A 1590
Tisdall F F 1760
Titelbaum S 164
Tobler W 2172
Tocantins L M 905
Tolhurst J C 911
Tomoda M 1760
Toomcy J A 77 *402
Torrey M A 2103
Tosi S 395
Tournaire A 541
Townsend S R 2095
Traeger C H 1307
Transbl L 1322
Trapp C E 1312
Traub E 750
Traut E F 988
Travers J T 539
Traversaro J C 542
Travis R C 236
Trimble H G 986
Trumble H C 311
Tschopp W 751
Tucker C C 166
Tuft L 606
Tulloch W J 2106
Turner K B *25
Turner T B 462
Tyson R M *753

U

Ullerrak K 1162
Ulrich H 2101
Unger F 1676
Unkauf B M 1076
Upham J H J 1761
Upham R *42
Urbach E 833 1767
Urnes M P *1616
Usliton L J *1425

V

Vaccarezza R F 1765
Vachon A 1761
Valentin M 396
del Valle D 2024
van Bogaert L 175
van Creveld S 1846
van der Merwe T 18 7
van der Meulen F 1210
van der Veer J B *1808
van der Wielen J 398
van Dijkhoek H A F 2110
van Meeteren A 998
van Nieuwenhuizen C L C 1862

AUTHOR INDEX

Y

2230

Van Winkle W Jr 1756
Vanzant F R 903
Varela Fuentes B 470
Vaughan H F *771 1398
Vaughan W 1157
Veal J R 1845
Vermooten V *857
Versari A 2108
Vervloet C G 1240
Verzár F 1407
Vlets H R *399 *1956
Villaret M 2107
Viola P 742
Viola H 1587
Vishnevsky A V 1496
Vollmer H 2095
Volterra M 1588
Vonder Helde E C *1983
Vonderlehr R A *425
Vonn J M M 178
von Storch T J C 1233
Vorwerk W 1161
Voss H 243
Voüte 1675

W

de Waard R H 1862
Wahl F A 177
Walnwright C W 1396
Walch Sorgdrager B 632
Walcott A M 2017
Wald H 1485
Walker T F *431
Wallace J E 625
Wallace R P 1487
Walter O M 1816
Walters W *1591

Walther H W E *999
Walzl E M 1314
Wangensteen O H 1078
Wanscher, O 1322
Wardrip B H 986
Wardrip H A 1489
Warren S *575
Warren S L *1430
Warren R 1294
Wartenberg J A *1122
Washington C H 743
Watkins M 993 993
Watson J R 1487 2100
Vaugh J R H 1759
Weaver H 1944
Weber H 1849
Weidman W H 1849
Well A J 1232
Well P E 912
Well T 822
Weinberg S S 827
Weinstein D 313
Welsberger J 2109
Welskotten H G *2136
Welsman S A *1440
Welss A 535
Welss D 617
Welss O 1944
Welss S *786 986
Welssmann A 472
Welsz R 751
Weller G L, Jr 1315
Wells A H, *1176
Wells C W, 1398
Wells H G *190
Wells J W 741
Welty J B 1216
Wendel W 1321 1860
Wendt H 832
Wenzl O 832

Werner A A *1027 *1786
Werner E 470
Werner M 1156
Wertheim H 1496
Westerfeld W V 1312
Wharton L R *1597 2098
Wheeler W E 2020
Whipple E G *2061
White A S *1900
White J W 392
White P D 235 *863
White *1775
Whitehill M R 1488
Whitehorn J C 823
Whiting I 1153
Whitney H A *328
Whitney J S 78
Whittaker L D 84
Widenbauer F 397
Wiebel H 92
Wiener A S 294
Wikler A *430
Wilbur D L *549
Wilbur E L *1194
Wilcox H L 1490
Wildbolz H 168
Wilensky N D *2125
Wilens H O *1965
Wilkins R W *786 986
Wilkinson J F 993
Wilkinson M C *1012
Williams G E *564
Williams O O 1757
Williams P C 1518
Willms F A 81
Wilson G H 910
Wilson J A 389
Wilson M G 825

Wilson P D 1228
Wilson R A 2103
Windholz F 1495
Windle W F 1938
Wingfield A 171
Winter M D *258
Winterton W R 626
Wintrobe M M *1170
Wintz H 997
Wirth D 997
Wise F 1486
Wissler H 2023
Witts J J 747
Wolbarst A L *1623
Wolf A 1399
Wolfer J A 303
Wolferth C C *1769
Wolff E *2042
Wolpaw S E 538
Woodard H Q 2167
Woods A C 1403
Wooley J G *410
Work E G *490
Worsaae E 1496
Wortis J 1470
Wright A 809
Wright I S *649
Wright R E 1236
Wright W H *570
Wugmeister, I 628
Wunder E 1861
Wjatt B L 1482
Wyckelheld Bisdorf C J 178
Wydrin A 998
Wjille A M 829
Wyman L 82
Wynants J H 1493
Wynn W 1579

Z

Yaglou C P *945
Yampolsky J 1488
Yang C S 911
Yao K F 824
Yater W M 235
Yates A L *250
Yodh B B 172
Young B R 1285
Young C J 1159
Young J 314
Young J R 991
Young M 1404
Young M W 1205

Z

Zahorsky J 226
Zajicek O 94
Zak E 93
Zalkan D M 544
Zancan B 318
Zanfagnini G 995
Zarod W A *1693
Zblatoff N 1316
Zeland J 1858
Zimman S 470
Zischinsky H 1590
Ziskin T 310 906
Ziskind E *20
Ziskind E S *20
Zlotnik, A, 1407
Zoechl S 318
Zollinger R 1157
Zoss A R 310
Zuccoll A 1320
Zuckerman S 1857
Zunino E 91

